

AGENDA

Elgin Area Primary Water Supply System Joint Board of Management

Committee Room #5
2nd Floor, City Hall

5:00 p.m.
Thursday, October 5, 2017

PART 1 CALL TO ORDER

1. Disclosures of Pecuniary Interest.

PART 2 ADOPTION OF MINUTES

2. Minutes of the 3rd Meeting held on Thursday, June 8, 2017

PART 3 CONSENT ITEMS

I. Correspondence

- A. Note and File:
- B. Receipt with response by Administration:
- C. Receipt and Deferral Pending Report from Administration:

II. Staff Reports

3. K. Scherr, Chief Administrative Officer – **Quarterly Compliance Report (2nd Quarter 2017: April - June).**
4. K. Scherr, Chief Administrative Officer – **Environmental Management System and Quality Management System.**
5. K. Scherr, Chief Administrative Officer – **Capital Status Report.**
6. K. Scherr, Chief Administrative Officer – **Clearwell/Reservoir Drainage Improvements Project.**
7. K. Scherr, Chief Administrative Officer – **Low Lift 4. 16kV Motor Control Centre Replacement.**
8. K. Scherr, Chief Administrative Officer – **High Lift Switchgear Replacement Project.**

PART 4 ITEMS FOR DISCUSSION

9. K. Scherr, Chief Administrative Officer – **2018 Operation and Capital Budget (Previously Circulated).**

PART 5 ADDITIONAL BUSINESS

PART 6 DEFERRED ITEMS, PENDING NEW ITEMS AND REPORTS

PART 7 CONFIDENTIAL MATTERS

PART 8 UPCOMING MEETING DATES

December 7, 2017

MINUTES OF THE
3RD MEETING OF THE
JOINT BOARD OF MANAGEMENT
ELGIN AREA PRIMARY WATER SUPPLY SYSTEM

Meeting held on June 8, 2017 at the London City Hall, commencing at 5:01 PM.

PRESENT: P. Barbour (Chair), H. Jackson, G. Jones, D. Marr, V. Ridley, L. Stevenson and H. Usher and J. Bunn (Committee Secretary).

ALSO PRESENT: S. Flanagan, I. Fleck, D. Gibson, A. Henry, J. Meuler, C. Murchland, D. Rodregues, K. Scherr and B. Tully.

1. Disclosures of Pecuniary Interest

None are disclosed.

2. Adoption of Minutes

JACKSON AND STEVENSON

That the Minutes of the March 9, 2017 meeting of the Elgin Area Primary Water Supply System Joint Board of Management **BE NOTED AND FILED. CARRIED**

3. Quarterly Compliance Report (1st Quarter 2017: January - March)

RIDLEY AND JONES

That, on the recommendation of the Chief Administrative Officer, the report dated June 8, 2017, with respect to the general, regulatory and contractual obligations of the Elgin Area Primary Water Supply System, for January to March 2017, **BE RECEIVED. CARRIED**

4. Environmental Management System and Quality Management System

RIDLEY AND JONES

That, on the recommendation of the Chief Administrative Officer, the Environmental Policy related to the Environmental Management System and Quality Management System for the Elgin Area Primary Water Supply System, as appended to the report dated June 8, 2017, **BE ENDORSED CARRIED**

5. Water Supply Agreements

RIDLEY AND JONES

That, on the recommendation of the Chief Administrative Officer, the report dated June 8, 2017 with respect to the status of Water Supply Agreements with the water system's benefiting municipalities, **BE RECEIVED. CARRIED**

6. 2016 Audited Financial Statement

RIDLEY AND JONES

That, on the recommendation of the Chief Administrative Officer, the 2016 Audited Financial Statement for the Elgin Area Primary Water Supply System, as appended to the report dated June 8, 2017, **BE RECEIVED. CARRIED**

7. Process Optimization and Research Day for Stakeholders

RIDLEY AND JONES

That, on the recommendation of the Chief Administrative Officer, the report dated June 8, 2017 with respect to the Process Optimization and Research Day, **BE RECEIVED. CARRIED**

8. Operations and Maintenance Service Agreement – Negotiation of Term Extension

RIDLEY AND STEVENSON

That, on the recommendation of the Chief Administrative Officer, the Board Chair and the Chief Administrative Officer **BE AUTHORIZED** to execute the Operations and Maintenance Service Amending Agreement with the Ontario Clean Water Agency, as appended to the report dated June 8, 2017. **CARRIED**

9. Confidential Matters

Prior to going into closed session, the Joint Board passed the following motion:

JACKSON AND RIDLEY

C-1. That the Board convene in closed session to consider a matter pertaining to the security of the property of the municipality or local board. **CARRIED**

The Board convenes in closed session at 5:04 PM.

The Board reconvenes in public session at 6:16 PM.

10. Adjournment

RIDLEY AND USHER

That the meeting of the Elgin Area Primary Water Supply System Joint Board of Management adjourn. **CARRIED**

The meeting adjourns at 6:26 PM.

P. Barbour, Chair

J. Bunn, Committee Secretary



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To: Chair and Members
Elgin Area Primary Water Supply System Board of Management

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Meeting Date: October 5, 2017

Subject: Quarterly Compliance Report (2nd Quarter 2017: April - June)

RECOMMENDATION

That the Quarterly Compliance report with respect to the general, regulatory and contractual obligations of the Elgin Area Primary Water Supply System **BE RECEIVED** for the information of the Board of Management; it being noted that there were no Adverse Water Quality Incidents reported in the 2nd quarter of 2017.

EXECUTIVE SUMMARY

During the past calendar quarter, there were no new or proposed regulatory changes that will have a significant impact on the Elgin Area Primary Water Supply System (EAPWSS).

The Water Quality Quarterly Report for the period of April 1 to June 30 was posted on the water system's website at www.watersupply.london.ca. There were no Adverse Water Quality Incidents reported by the operating authority during this quarter.

An on-site compliance inspection was conducted by the Ministry of the Environment and Climate Change (MOECC) on August 23, 2017. The final inspection report will be the subject of a future report to the Board.

BACKGROUND

Pursuant to Board of Management resolution, this Compliance Report is prepared on a quarterly basis to report on general, regulatory and contractual compliance issues relating to the regional water system. For clarity, the content of this report is presented in two basic areas, namely regulatory and contractual, and does not intend to portray an order of importance or sensitivity nor a complete list of all applicable regulatory and contractual obligations.

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REGULATORY ISSUES

Recent Regulatory or Other Changes: At the time of drafting this report, there are no new regulatory changes for this reporting period which may significantly impact the EAPWSS.

New Environmental Bill of Rights (EBR) Registry Postings: At the time of drafting this report, there were no new EBR postings during this reporting period that may have a significant impact on the EAPWSS.

Quarterly Water Quality Reports: The Water Quality Quarterly Report for the period of April 1st to June 30th, 2017 inclusive was completed by the operating authority. There were no adverse laboratory test results for the EAPWSS during this quarter. The report is posted on the Water Systems' website at www.watersupply.london.ca and is included in this report as Appendix A for the Board's information. The water quality sample results will continue to be provided and posted on a quarterly basis for the Board's and the public's information.

It is important to note that the Maximum Allowable Concentration (MAC) are the permitted maximum values of the listed parameter, and are considered adverse incidents where the water quality exceeds the listed value. Alternatively, "aesthetic objectives" and operational guidelines are not regulated but are included as suggested guidelines for the associated parameters. Variance of water quality beyond the listed aesthetic objective is not considered an adverse incident as there are no health risks associated with exceeding the suggested objective.

Adverse Water Quality Incidents (AWQIs): There were no AWQI reported by the operating authority during this quarter.

Compliance Inspections: The Ministry of the Environment and Climate Change (MOECC) conducted an unannounced physical inspection of the EAPWSS on August 23, 2017. When the final inspection report is received from the MOECC it will be the subject of a future report to the Board.



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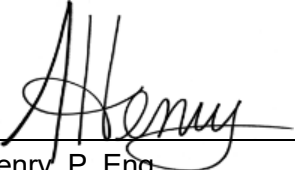
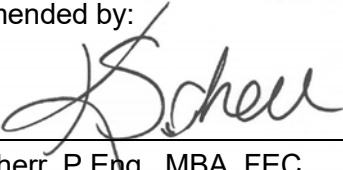
File No. E27/2017

CONTRACTUAL ISSUES

ARTICLE 3, “Operation and Maintenance of the Facilities – General”:

Board staff informally meets with OCWA on a monthly basis to discuss operations and maintenance related issues, and on a formal basis quarterly to review contractual performance. The 2017 second quarter Contract Report was received from OCWA on July 26, 2017, and was discussed at the quarterly administration meeting between Board staff and OCWA on August 10, 2017. Copies of the monthly Operations and Maintenance Reports, or quarterly reports are available at the Board’s Administration Office in London upon request.

Information for this report was provided by Erin McLeod, Quality Assurance & Compliance Manager.

Report by:  <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> Andrew Henry, P. Eng. Division Manager, Regional Water Supply	Recommended by:  <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> Kelly Scherr, P.Eng., MBA, FEC Chief Administrative Officer
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Attachments:

Appendix A: Water Quality Quarterly Report – 2nd Quarter 2017 (April - June)

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APPENDIX A: WATER QUALITY QUARTERLY REPORT – 2ND QUARTER 2017 (APRIL - JUNE)

*** There were no adverse laboratory test results for the Elgin Area Primary Water Supply System during this quarter.**

Analytical Test Results: (All values are reported in mg/L unless otherwise noted)

Microbiological Parameters (Required Testing Under O.Reg. 170/03)

Microbiological Parameters	MAC or IMAC	No. of Samples	No. of Detectable Results	No. of Adverse Results	Method	Sampling Date	Results		Comments
							Min.	Max.	
Total Coliform (counts/100ml) *	Not Detectable	64	0	0	Membrane Filtration	Apr-Jun	0	0	Parameter sampled is used to test for the possible presence of fecal matter. Zero detectable test results indicate that Total Coliforms were not detected.
<i>E. Coli</i> (counts/100ml) *	Not Detectable	64	0	0	Membrane Filtration	Apr-Jun	0	0	Parameter sampled is used to test for the possible presence of fecal matter. Zero detectable test results indicate that <i>E.Coli</i> was not detected.
Heterotrophic Plate Count (counts/1ml)	N/A	64	4	0	Spread Plate Count	Apr-Jun	<10	10	Test parameter is used as an indicator of possible deterioration of water quality. Increases in HPC concentrations above baseline levels are considered undesirable.

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Operational Parameters:

Operational Parameters	MAC or IMAC	Objective AO/OG	No. of Samples	Sampling Date	Results			Comments
					Min.	Max.	Avg.	
Chlorine Residual ¹ , Free (mg/L)			Continuous monitoring plus 6 grab samples per day	Apr-Jun	0.92	1.47	1.22	The maintenance of an adequate free chlorine residual is essential to the protection of public health. Values reported are an average of the 6 daily grab samples. The regulated minimum for free chlorine residual concentration in a water distribution system is 0.05mg/L; however the contractual obligation of the water system is to achieve 0.5mg/L at the point of supply to the municipalities.
Chlorine Residual ¹ , Total (mg/L)			Continuous monitoring plus 2 grab samples per day	Apr-Jun	1.10	1.76	1.40	The maintenance of an adequate free chlorine residual in essential to the protection of public health. Values reported are an average of the 2 daily grab samples.
Colour (TCU)		5	2 grab samples per day	Apr-Jun	<3	<3	<3	Values reported are an average of the 2 daily grab samples.
Conductivity (µS/cm)			Continuous monitoring plus 2 grab samples per day	Apr-Jun	153	210	197	Values reported based on daily minimum, maximum and average that have been recorded electronically.
pH		6.5 – 8.5	Continuous monitoring plus 6 grab samples per day	Apr-Jun	7.31	7.73	7.50	Values reported are an average of the 6 daily grab samples.
Turbidity ^{1,2} (NTU)			Continuous monitoring plus 6 grab samples per day	Apr-Jun	0.023	0.099	0.057	Turbidity (cloudiness) of water is an indication of the presence of particles in the water. If excessive, it may interfere with proper disinfection. Values reported are an average of the 6 daily grab samples.
Fluoride ¹ (mg/L)	1.5	0.6 – 0.8	Continuous monitoring plus 2 grab samples per day	Apr-Jun	0.47	0.80	0.65	Naturally occurring fluoride levels are supplemented during treatment to achieve the optimum level of 0.7mg/L recommended by Health Canada. The Ministry of Health and Long Term Care's document "Protocol for the Monitoring of Community Water Fluoride Levels" recommends a therapeutic range of 0.6 - 0.8 mg/L for fluoride. Values reported are an average of the 2 daily grab samples.
Aluminum (mg/L)		<0.1	2 grab samples per day	Apr-Jun	0.001	0.052	0.013	Aluminum levels are slightly elevated during treatment as a result of the use of alum to help in the removal of particulates.
Temperature (Celsius)		15	Continuous monitoring plus 6 grab samples per day	Apr-Jun	5.0	19.9	11.8	Raw Water Temperature. Values reported are an average of the 6 daily grab samples.

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Inorganic Parameters (Required Testing Under O.Reg. 170/03 – Schedule 23):

Schedule 23 - Inorganic Parameters		MAC or IMAC (mg/L)	Objective AO/OG	O.Reg. 170/03 Required Frequency of Testing (months)	2016		2017		Reportable Detection Limit (mg/L)	Comments
					Q3	Q4	Q1	Q2		
1.	Antimony	0.006		12	0.00031	NT	0.00012	NT	0.00002	
2.	Arsenic	0.025		12	0.0003	NT	0.0003	NT	0.0002	
3.	Barium	1.0		12	0.0247	NT	0.022	NT	0.00001	
4.	Boron	5.0		12	0.018	NT	0.020	NT	0.0002	
5.	Cadmium	0.005		12	0.00001 2	NT	0.000009	NT	0.000003	
6.	Chromium	0.05		12	0.00044	NT	0.00055	NT	0.0005	
7.	Mercury	0.001		12	ND	NT	ND	NT	0.00002	
8.	Selenium	0.01		12	0.00020	NT	0.00019	NT	0.001	
9.	Uranium	0.02		12	0.00005 1	NT	0.000047	NT	0.000001	

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Organic Parameters (Required Testing Under O.Reg. 170/03 – Schedule 24):

Schedule 24 – Organic Parameters		MAC or IMAC (mg/L)	Objective AO/OG	O.Reg. 170/03 Required Frequency of Testing (months)	2016		2017		Reportable Detection Limit (mg/L)	Comments
					Q3	Q4	Q1	Q2		
1.	Alachlor	0.005		12	ND	NT	ND	NT	0.00002	Herbicide
2.	Atrazine + N-dealkylated metabolites	0.005		12	0.00005	NT	0.00005	NT	0.00001	Herbicide
3.	Azinphos-methyl	0.02		12	ND	NT	ND	NT	0.00002	Insecticide
4.	Benzene	0.005		12	ND	NT	ND	NT	0.00032	An aromatic hydrocarbon present in gasoline
5.	Benzo(a)pyrene	0.00001		12	ND	NT	ND	NT	0.000004	A polycyclic aromatic hydrocarbon (PAH) that forms during the combustion of organic matter (eg. emissions from burning fossil fuels)
6.	Bromoxynil	0.005		12	ND	NT	ND	NT	0.00033	Herbicide
7.	Carbaryl	0.09		12	ND	NT	ND	NT	0.00001	Insecticide
8.	Carbofuran	0.09		12	ND	NT	ND	NT	0.00001	Insecticide
9.	Carbon Tetrachloride	0.005		12	ND	NT	ND	NT	0.00016	An organic liquid that is primarily released from man-made sources; used in industrial and agricultural process
10.	Chlorpyrifos	0.09		12	ND	NT	ND	NT	0.00002	Pesticide
11.	Diazinon	0.02		12	ND	NT	ND	NT	0.00002	Insecticide
12.	Dicamba	0.12		12	ND	NT	ND	NT	0.0002	Herbicide
13.	1,2-Dichlorobenzene	0.2	0.003	12	ND	NT	ND	NT	0.00041	An organic compound used in both industrial and commercial products (coolant, degreaser, solvent)
14.	1,4-Dichlorobenzene	0.005	0.001	12	ND	NT	ND	NT	0.00036	An organic compound used in both industrial and commercial products (deodorizer, fungicide, lubricant)

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Schedule 24 – Organic Parameters		MAC or IMAC (mg/L)	Objective AO/OG	O.Reg. 170/03 Required Frequency of Testing (months)	2016		2017		Reportable Detection Limit (mg/L)	Comments
					Q3	Q4	Q1	Q2		
15.	1,2-Dichloroethane	0.005		12	ND	NT	ND	NT	0.00035	An organic chemical with many industrial and commercial applications (solvent, fumigant, ingredient in plastics etc.)
16.	1,1-Dichloroethylene (vinylidene chloride)	0.014		12	ND	NT	ND	NT	0.00033	Volatile organic compound; imported for use in the food packaging and textile industries
17.	Dichloromethane	0.05		12	ND	NT	ND	NT	0.00035	Volatile organic compound used in a variety of industries (electronics, textiles, pharmaceuticals, plastics etc.)
18.	2,4-Dichlorophenol	0.9	0.0003	12	ND	NT	ND	NT	0.00015	An organic compound used in industry and chemical manufacturing
19.	2,4-Dichlorophenoxy acetic acid (2,4-D)	0.1		12	ND	NT	ND	NT	0.00019	Herbicide
20.	Diclofop-methyl	0.009		12	ND	NT	ND	NT	0.0004	Herbicide
21.	Dimethoate	0.02		12	ND	NT	ND	NT	0.00003	Insecticide
22.	Diquat	0.07		12	ND	NT	ND	NT	0.001	Herbicide
23.	Diuron	0.15		12	ND	NT	ND	NT	0.00003	Herbicide
24.	Glyphosate	0.28		12	ND	NT	ND	NT	0.006	Herbicide
25.	Malathion	0.19		12	ND	NT	ND	NT	0.00002	Insecticide
26.	Metolachlor	0.05		12	ND	NT	ND	NT	0.00001	Herbicide
27.	Metribuzin	0.08		12	ND	NT	ND	NT	0.00002	Herbicide
28.	Monochlorobenzene	0.08	0.03	12	ND	NT	ND	NT	0.0003	A man-made organic compound; primarily used as a solvent
29.	Paraquat	0.01		12	ND	NT	ND	NT	0.001	Herbicide
30.	Pentachlorophenol	0.06		12	ND	NT	ND	NT	0.00015	An organic compound; used as a pesticide and wood preservative (manufacture and use banned since the 1980's)

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Schedule 24 – Organic Parameters		MAC or IMAC (mg/L)	Objective AO/OG	O.Reg. 170/03 Required Frequency of Testing (months)	2016		2017		Reportable Detection Limit (mg/L)	Comments
					Q3	Q4	Q1	Q2		
31.	Phorate	0.002		12	ND	NT	ND	NT	0.00001	Insecticide
32.	Picloram	0.19		12	ND	NT	ND	NT	0.001	Herbicide
33.	Polychlorinated Biphenyls (PCB)	0.003		12	ND	NT	ND	NT	0.00004	An organic compound; used in electrical equipment and as a fire retardant (use has been banned since the 1980's)
34.	Prometryne	0.001		12	ND	NT	ND	NT	0.00003	Herbicide
35.	Simazine	0.01		12	ND	NT	ND	NT	0.00001	Herbicide
36.	Terbufos	0.001		12	ND	NT	ND	NT	0.00001	Insecticide
37.	Tetrachloroethylene (perchloroethylene)	0.030		12	ND	NT	ND	NT	0.00035	An organic compound; used as a solvent in dry cleaning and metal cleaning industries
38.	2,3,4,6-Tetrachlorophenol	0.10	0.001	12	ND	NT	ND	NT	0.00014	An organic compound; currently used mainly as a wood preservative
39.	Triallate	0.23		12	ND	NT	ND	NT	0.00001	Herbicide
40.	Trichloroethylene	0.05		12	ND	NT	ND	NT	0.00044	Volatile organic compound; used in metal degreasing operations and chemical manufacturing
41.	2,4,6-Trichlorophenol	0.005	0.002	12	ND	NT	ND	NT	0.00025	Volatile organic compound; used in the manufacture of pesticides
42.	Trifluralin	0.045		12	ND	NT	ND	NT	0.00002	Herbicide
43.	Vinyl Chloride	0.002		12	ND	NT	ND	NT	0.00017	Volatile organic compound; Used in making PVC (polyvinyl chloride) plastic items
44.	2 methyl-4-chlorophenoxyacetic acid (MCPA)	0.1 *		12	ND	NT	ND	NT	0.00012	Herbicide *The MAC takes effect on January 1, 2017.

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Additional Organic Parameters (Removed from Schedule 24 as of January 1, 2016)		MAC or IMAC (mg/L)	Objective AO/OG	Required Frequency of Testing (months)	2016		2017		Reportable Detection Limit (mg/L)	Comments
					Q3	Q4	Q1	Q2		
1.	Aldicarb			NR	ND	NT	ND	NT	0.00001	Insecticide
2.	Aldrin + Dieldrin			NR	ND	NT	ND	NT	0.00001	Insecticide
3.	Bendiocarb			NR	ND	NT	ND	NT	0.00001	Insecticide
4.	Chlordane (total)			NR	ND	NT	ND	NT	0.00001	Pesticide
5.	Cyanazine			NR	ND	NT	ND	NT	0.00003	Herbicide
6.	Dichlorodiphenyltrichloroethane (DDT) + metabolites			NR	ND	NT	ND	NT	0.00001	Insecticide
7.	Dinoseb			NR	ND	NT	ND	NT	0.00036	Insecticide, Herbicide
8.	Heptachlor + Heptachlor Epoxide			NR	ND	NT	ND	NT	0.00001	Insecticide
9.	Lindane (Total)			NR	ND	NT	ND	NT	0.00001	Pesticide
10.	Methoxychlor			NR	ND	NT	ND	NT	0.00001	Insecticide
11.	Parathion			NR	ND	NT	ND	NT	0.00002	Insecticide
12.	Temephos			NR	ND	NT	ND	NT	0.00001	Insecticide
13.	2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)			NR	ND	NT	ND	NT	0.00022	Herbicide

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General Chemistry and Physical Parameters (Additional Regulatory and Contractual Testing):

General Chemistry and Physical Parameters	MAC or IMAC (mg/L)	Objective AO/OG (mg/L)	O.Reg. 170/03 Required Frequency of Testing (months)	Contractual Required Frequency of Testing (months)	2016		2017		Reportable Detection Limit (mg/L)	Comments
					Q3	Q4	Q1	Q2		
Alkalinity (Total as CaCO ₃)		30 – 500	NR	6	90	104.5	97.5	104	2	Q2 value is an average of 2 sample results
Chloride		250	NR	12	NT	NT	18	NT		
Copper		1	NR	12	NT	NT	0.00523	NT	0.001	
Dissolved Organic Carbon (mg/L as C)		5	NR	12	1.75	1.5	1.75	1.5	0.1	Q2 value is an average of 2 sample results
Dissolved Inorganic Carbon (mg/L as C)			NR	6	22.2	NT	27.0	32.0		
Ethylbenzene		0.0024	NR	12	NT	NT	ND	NT		
Geosmin (ng/L)		4.0	NR	Weekly as Required	ND	ND	ND	NT	3.0 ng/L	Geosmin is tested weekly from July 1-Oct 31. Results are expressed as the average per quarter when testing is required.
Haloacetic Acids	0.080*	0.060	NR	3	ND	ND	ND	ND	0.0053	The standard is expressed as a running annual average of quarterly samples measured at a point reflecting the maximum residence time in the distribution system. Running annual average: ND *The MAC takes effect January 1, 2020.
Hardness (mg/L as CaCO ₃)		80 – 100	NR	12	NT	NT	131	NT	1	
Iron		0.3	NR	12	ND	ND	ND	ND		Q2 value is an average of 2 samples
Lead	0.01		NR	6	0.00003	NT	ND	NT	0.00002	
Manganese		0.05	NR	12	0.00042	0.00027	0.00040	0.00142		Q2 value is an average of 2 samples
Methane (L/m ³)		3L/m ³	NR	12	NT	NT	ND	NT		
2-Methylisoborneol (MIB) (ng/L)		8.5	NR	Weekly as Required	ND	ND	ND	NT	3.0 ng/L	MIB is tested weekly from July 1-Oct 31. Results are expressed as the average per quarter when testing is required.

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General Chemistry and Physical Parameters	MAC or IMAC (mg/L)	Objective AO/OG (mg/L)	O.Reg. 170/03 Required Frequency of Testing (months)	Contractual Required Frequency of Testing (months)	2016		2017		Reportable Detection Limit (mg/L)	Comments
					Q3	Q4	Q1	Q2		
Nitrate	10.0		3	3	0.116	0.096	0.155	0.505	0.013	Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)
Nitrite	1.0		3	3	ND	ND	ND	0.006	0.005	Where both nitrate and nitrite are present, the total of the two should not exceed 10 mg/L (as nitrogen)
Organic Nitrogen		0.15	NR	12	NT	NT	ND	NT	0.1	Organic nitrogen is calculated by subtracting Total Ammonia from Total Kjeldahl Nitrogen
Sodium		200	60	12	NT	NT	16.9	NT	0.5	The local Medical Officer of Health must be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.
Sulphate		500	NR	12	NT	NT	40	NT	1	
Sulphide		0.05	NR	12	NT	NT	ND	NT		
Toluene		0.024	NR	12	NT	NT	ND	NT	0.0002	
Total Dissolved Solids		500	NR	12	NT	NT	171	NT		
Trihalomethanes	0.100		3	3	0.015	0.017	0.0086	0.012	0.00037	The standard is expressed as a running annual average of quarterly samples measured at a point reflecting the maximum residence time in the distribution system. Running annual average: 0.0132 mg/L
Xylenes		0.3	NR	12	NT	NT	ND	NT		
Zinc		5.0	NR	12	NT	NT	0.003	NT	0.005	

Discussion of Analytical Results:

- * Indicator of adverse water quality
- 1 In addition to the analytical samples noted above, chlorine residual, fluoride residual, and turbidity are measured on a continuous basis at the treatment facility using on-line instrumentation.
- 2 Turbidity is both regulated by the Province of Ontario, and specified in accordance with the operating agreement with the Contracted Operating Authority. The turbidity reported (6 daily grab samples) is taken from the plant treated water discharge, which is not explicitly regulated in Provincial Regulations. Provincial Standards recommend an aesthetic objective of 5 NTU within a distribution system, and Provincial Regulation specifies a maximum of 1 NTU on individual filter effluent. The contract with the Operating Authority specifies a maximum turbidity of 0.2 NTU on treated water discharge from the water treatment plant and 0.1 NTU on individual filter effluent. There is currently no standard for combined filter effluent.

MAC or IMAC – Maximum Acceptable Concentration or Interim Maximum Acceptable Concentration; as identified in O.Reg. 169 (Ontario Drinking-Water Quality Standards) and the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines

AO/OG – Aesthetic Objective/Operational Guideline; as identified in the Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines

NT – Not Tested during this quarter

NR – Not Required

ND – Not Detected

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To: Chair and Members
Elgin Area Primary Water Supply System Board of Management

From: Kelly Scherr, P. Eng., MBA, FEC
Chief Administrative Officer

Meeting Date: October 5, 2017

Subject: Environmental Management System and Quality Management System

RECOMMENDATION

That the following report with respect to the Environmental Management System and Quality Management System for the Elgin Area Primary Water Supply System **BE RECEIVED** for information.

DISCUSSION

Environmental Management System (EMS)

The Elgin Area Primary Water Supply System (EAPWSS) has an Environmental Management System (EMS) which has been registered to the ISO 14001 standard since 2003. The EAPWSS underwent a three-year re-registration audit in October 2015 and was recommended for continued registration to the ISO 14001:2004 standard for another three-year period (ending in 2018). The latest revision of the international standard, ISO 14001:2015, was released in September 2015 and the transition to meet the requirements of the new standard is currently taking place in anticipation of a re-registration audit in 2017.

The continued utilization and registration of the EMS to the ISO 14001 standard is a requirement of the Service Agreement with Ontario Clean Water Agency (OCWA), the contracted Operating Authority for the EAPWSS.

Quality Management System (QMS)

In 2006, the Drinking Water Quality Management Standard (DWQMS) was integrated with the existing EMS and the combined EMS/QMS is maintained by the contracted Operating Authority. The *Safe Drinking Water Act* and the water system's Municipal Drinking Water Licence (MDWL) require that an accredited Operating Authority be in operational charge of the drinking water system. In order to become accredited, the Operating Authority must utilize and maintain an Operational Plan that meets the requirements of the DWQMS, and must undergo an external accreditation audit. OCWA received full scope DWQMS re-accreditation in October 2016 and is currently accredited for the three-year period ending in 2019.

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Management Review

The documented EMS/QMS and its performance requires Management Review by Top Management a minimum of once annually to ensure that the management team of the Board and the Operating Authority stay informed of environmental and quality related issues. Items discussed at the Management Review meetings include, but are not limited to, water quality test results, environmental and quality performance, legislative changes, identified non-conformances, corrective and preventive actions, staff suggestions, changing circumstances and business strategies, and resource requirements. Corrective and preventive actions include not only those to address non-conformance issues and opportunities for improvement identified as part of internal and external audits, but also non-compliance issues identified by the Ministry of the Environment and Climate Change (MOECC), suggestions from staff, and opportunities for improvement identified during the Management Review process.

In order to carry out more effective Management Review meetings, the Board's administration has opted to conduct shorter meetings at more frequent intervals. Although each required Management Review input may not be covered at every meeting, over the course of the year all required inputs are reviewed at least once. A Management Review meeting was held on August 24, 2017. The meeting minutes are attached as Appendix A of this report for the information of the Board.

Internal Audits

Pursuant to the international ISO 14001 EMS standard and the provincial DWQMS, periodic "internal" audits are performed by the Board's administration to ensure continued compliance with legislated, contractual, and other requirements, as well as conformance with the ISO 14001 EMS standard and DWQMS. Internal audits also ensure that the ongoing operation of the EAPWSS conforms to the EMS and QMS as implemented. As required by the standards, internal audits are performed a minimum of once annually.

A full DWQMS Internal Audit took place on June 19 and 26, 2017. A summary of the audit findings is included in Appendix B of this report. One (1) non-conformance and twenty three (23) opportunities for improvement were identified during the audit. The findings were discussed at the August 24, 2017 management review meeting and action items were assigned.

A full EMS (ISO 14001:2015) internal audit took place on August 2 and 3, 2017. A summary of audit findings is included in Appendix C of this report. One (1) non-conformance and nineteen (19) opportunities for improvement were identified during the audit. The findings were discussed at the August 24, 2017 management review meeting and action items were assigned.

External Audits

Annual surveillance audits (third-party external audits) are conducted for both the EMS and QMS, with a recertification audit taking place every third year. The external registrar for both the EMS and QMS is currently SAI Global. External audits review all aspects of the EMS or QMS, including the internal audits, subsequent management reviews, and corrective action processes.

There were no external audits conducted during this reporting quarter. An EMS external audit is scheduled for October 2-3, 2017. A summary of audit findings will be reported at the subsequent management review meeting and reported to the Board.

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Corrective and Preventive Actions

For the EMS and the QMS to be effective on an on-going basis, an organization must have a systematic method for identifying actual and potential non-conformities, making corrections and taking corrective and preventive action, preferably preventing problems before they occur. The Internal Audit process and Management Review are the two main drivers for identifying potential problems for the EAPWSS and implementing corrective actions. Preventive actions may originate from identified opportunities for improvement as part of an audit, but also staff suggestions and discussions with management.

It is important to note that Action Items should not be construed as **compliance failures**, but rather an action to be undertaken which will improve our overall performance. An action item is often the result of staff suggestions, meetings with stakeholders and Management Reviews, and identified opportunities for improvements from internal and external audits.

The following table summarizes the status of action items assigned to date. Action items may be assigned to either the Owner or Operating Authority.

	# of Action Items Assigned	# of Action Items Completed	# of Action Items Outstanding	# of Action Items Overdue	% Completion
2012	55	55	0	0	100
2013	72	72	0	0	100
2014	28	28	0	0	100
2015	65	63	1	1	97
2016	88	80	8	6	91
2017 (Year to date)	63	20	43	3	32
TOTAL	371	318	52	10	86

The ten (10) overdue action items are all proactive in nature (not corrective) and generally relate to the following:

- Reviewing the existing regulatory and operations reports in SCADA and making recommendations for improvement.
- Providing the plant operations staff with training on Energy Management. Board staff currently working with a consultant who is updating their proposal. Independent Electricity System Operator (IESO) has just released a new training program that may be applicable to our needs.
- One item relates to the transition to ISO 14001:2015 standard which includes a review of the Board's Guiding Principles and strategic plan.
- Three items relate to revising EMS/QMS documentation to streamline it, avoid duplication and update it where required due to the ISO 14001 transition.
- One action item relates to the Residuals Management Facility (RMF) project. Staff is waiting for the As-Built record drawings to be delivered from the consultant and then the project EMS/QMS checklist can be closed out. Anticipated completion Fall 2017.
- Two action items related to bringing a policy related question regarding spills notification to the MOECC for their consideration. The Division Manager has submitted a request through the

Ontario Municipal Water Association (OMWA) for discussion at the September 13th meeting with the Ministry’s Assistant Deputy Minister and Directors.

- One action item regarding notifying RWS staff that when preparing tenders and procurement documents to consider specifying that asbestos containing material (ACM) is not to be used in supplied products. Division Manager is proposing a Project Management Meeting for RWS staff and will include this item.

Changes from previous reporting period:

- One (1) new proactive action item was added as a result of the August 24, 2017 Management Review meeting.
- Twenty four (24) new action items were added as a result of the June 19th & 26th DWQMS internal audit.
- Twenty (20) new action items were added as a result of the August 2nd & 3rd EMS internal audit.

For reporting clarity, the table above will be updated on a quarterly basis to track completions and outstanding items. In addition, any changes which occurred from the previous reporting period will be specifically noted for the reference of the Board.

PLAN-DO-CHECK-ACT

It should be noted that the “PLAN-DO-CHECK-ACT” system required by the ISO 14001 standard and DWQMS requires continuous monitoring of the EMS/QMS, with periodic review and audits conducted to demonstrate conformance. A key concept of this approach (Plan-Do-Check-Act) is that it does not require or expect 100% conformance, but promotes an environment of continual review and improvement by identifying shortfalls, implementing corrective measures, and setting objectives and targets for improvement.

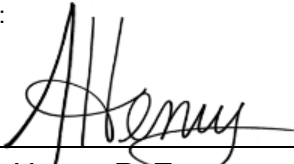
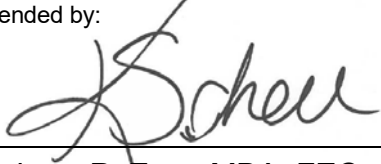
The monitor, review and audit philosophy is integrated in not only the monitoring of the registered EMS and QMS, but also with the Board’s contracted operations.

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CONCLUSION

The Internal Audits and frequent Management Review meetings continue to effectively identify system deficiencies. The EMS and QMS for the Elgin Area Primary Water Supply System continues to be suitable, adequate and effective. Activities by OCWA continue to address the need for change, and the management systems are being revised and refined as required.

This report was prepared by Erin McLeod, Quality Assurance & Compliance Manager and Arlene Tanashi, Compliance Coordinator.

Report by:  _____ Andrew Henry, P. Eng. Division Manager, Regional Water Supply	Recommended by:  _____ Kelly Scherr, P. Eng., MBA, FEC Chief Administrative Officer
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Attachments:

- Appendix A: Management Review Meeting Minutes (August 24, 2017)
- Appendix B: QMS Internal Audit Report Summary (June 19 & 26, 2017)
- Appendix C: EMS Internal Audit Report Summary (August 2-3, 2017)

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APPENDIX A: MANAGEMENT REVIEW MEETING MINUTES (AUGUST 24, 2017)

Lake Huron & Elgin Area Primary Water Supply Systems EMS/QMS Management Review	
Date	August 24, 2017
Time	9:00 am – 12:30 pm
Location	RWS Boardroom
Attendees	Andrew Henry (RWS), Erin McLeod (RWS), Blair Tully (OCWA), Denny Rodrigues (OCWA), Simon Flanagan (OCWA), Shawn Core (OCWA), Arlene Tanashi (RWS)
Regrets	
C.C.	

-----Meeting Notes -----

1. Review and Approval of Past Meeting Minutes – April 25, 2017

The minutes were approved. No changes required.

2. Huron & Elgin: Environmental Management System (EMS) Representative

Under ISO 14001:2015 Clause 5.3 Organizational roles, responsibilities and authorities:

Top management shall ensure that the responsibilities and authorities for relevant roles are assigned and communicated within the organization.

Top management shall assign the responsibility and authority for:

- a) ensuring that the EMS conforms to the requirements of the standard;
- b) reporting on the performance of the EMS, including environmental performance, to top management.

After discussion, top management agreed that Denny Rodrigues, Compliance Manager, OCWA would continue to be the EMS Representative.

3. Huron & Elgin: Interested Parties (ISO 14001:2015)

Under Clause 4.2 Understanding the needs and expectations of interested parties:

The organization shall determine:

- a) the interested parties that are relevant to the EMS;
- b) the relevant needs and expectations (i.e. requirements) of these interested parties;
- c) which of these needs and expectations become its compliance obligations.

Staff compiled a spreadsheet entitled “ISO 14001:2015 Interested Parties (Clause 4.2)”. Copies were circulated and an overview was provided. Discussion ensued and suggested additions and changes

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were incorporated. Top management requested that this be periodically reviewed, at least once per EMS registration cycle (i.e. every 3 years).

4. Huron & Elgin: External and Internal issues (ISO 14001:2015)

Under Clause 4.1 Understanding the organization and its context:

The organization shall determine external and internal issues that are relevant to its purpose and that affect its ability to achieve the intended outcomes of its EMS. Such issues shall include environmental conditions being affected by or capable of affecting the organization.

Staff compiled a spreadsheet entitled "ISO 14001:2015 External and Internal Issues (Clause 4.1)". Copies were circulated and an overview was provided. Discussion ensued and suggested additions and changes were incorporated. Top management requested that this be periodically reviewed, at least once per EMS registration cycle (i.e. every 3 years).

5. Elgin ISO 14001:2015 EMS Internal Audit – August 2-3, 2017

The purpose of the internal audit was to verify conformance with the ISO 14001:2015 Environmental Management Systems standard. A summary of the audit findings was circulated; one Non-Conformance and nineteen Opportunities for Improvement were noted. Discussion ensued and suggested additions and changes to action items and deadlines will be incorporated into the Corrective Action Form (CAF) tracking spreadsheet.

6. Elgin DWQMS Internal Audit – June 19 & 26, 2017

The purpose of the internal audit was to verify conformance with the Ontario Drinking Water Quality Management Standard (DWQMS) Version 2.0 February 2017. A summary of the audit findings was circulated; one Non-Conformance and 23 Opportunities for Improvement were noted. Discussion ensued and suggested additions and changes to action items and deadlines will be incorporated into the CAF tracking spreadsheet.

7. Huron DWQMS Internal Audit – July 11-12, 2017

The purpose of the internal audit was to verify conformance with the Ontario Drinking Water Quality Management Standard (DWQMS) Version 2.0 February 2017. A summary of the audit findings was circulated; three Non-Conformances and 18 Opportunities for Improvement were noted. Discussion ensued and suggested additions and changes to action items and deadlines will be incorporated into the CAF tracking spreadsheet.

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8. Huron ISO 14001:2015 EMS Internal Audit – August 17-18, 2017

The purpose of the internal audit was to verify conformance with the ISO 14001:2015 Environmental Management Systems standard. The Internal Audit report has not been issued to date. A summary of the audit findings will be circulated and discussed at next Management Review meeting in October.

9. Huron & Elgin: Raw Water Supply and Drinking Water Quality Trends

Handout of Elgin ten year trends included: raw water pH, treated water pH, filtered water aluminum residual, raw water turbidity, treated water turbidity, treated water fluoride residual, treated water free chlorine residual, THMs and HAAs.

General notes on the trends:

- turbidity meters were replaced at Elgin in December 2016, which are likely contributing to improving treated and filtered water turbidity trends
- it was noted that both Lake Erie and Lake Huron did not have any ice cover the past two winters, which can impact water quality trends.

Handout of Huron ten year trends included: raw water pH, treated water pH, raw water turbidity, treated water turbidity, treated water aluminum residual, treated water free chlorine residual, THMs and HAAs.

General notes on the trends:

- Exeter-Hensall MS3 had highest THMs because of longest residence time in distribution system but still well below the maximum acceptable concentration.

10. Huron & Elgin: Incidents of Regulatory Non-Compliance

Since the last Management Review meeting, there have been no Ministry of the Environment and Climate Change (MOECC) inspections or reports issued. MOECC conducted an unannounced inspection at EAPWSS on August 23, 2017. The final report will be discussed at the next Management Review meeting in October.

11. Huron & Elgin: Incidents of Adverse Drinking Water Tests

There have been no adverse water quality incident (AWQI) reports made year-to-date in 2017 or in the past 12 months for either LHPWSS or EAPWSS.

12. Huron & Elgin: Effectiveness of the QMS Risk Assessment Process

Both Huron and Elgin risk assessments were updated to include consideration of the potential hazardous events and associated hazards, as identified in the MOECC document titled Potential Hazardous Events for Municipal Residential Drinking Water Systems, dated February 2017. Many of these mandatory elements were already previously included in the risk assessment, and they have now all been considered as required.



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The risk assessment process continues to be suitable and effective. The DWQMS requires that the risk assessment identifies the method to verify, at least once every calendar year, the currency of the information and the validity of the assumptions used in the risk assessment. Both water systems are prompted to do the review by a generated work order.

The annual review of EAPWSS Risk Assessment took place on August 1, 2017 and was conducted by Bev Mollard, Simon Flanagan, Glenn McEown and Denny Rodrigues. The Elgin Residuals Management Facility (RMF) has now been considered in the risk assessment.

The annual review of LHPWSS Risk Assessment took place on July 31, 2017 and was conducted by Greg Henderson and Denny Rodrigues.

13. Huron & Elgin: Results of Emergency Response Testing

The Compliance Manager will forward results of any Emergency Response testing to RWS Compliance Coordinator only if there are any Action Items to be addressed. These items will be added to the CAF tracking spreadsheet to ensure that action items are tracked and completed, and 90 day verification takes place. The updated Emergency Review Test Tracking matrix will also be forwarded to the Compliance Coordinator. It was noted that any actual incidents can be used as a contingency plan review or test.

14. Huron & Elgin: Resources Needed to Maintain the EMS/QMS

It should be noted that the following will assist in the updating and streamlining of the EMS/QMS documentation to prepare for the external EMS registration and QMS surveillance audits in October and November 2017:

- The Electronic Document Management System (EDMS) has been implemented. Some documents have been uploaded. The access permissions for OCWA are being clarified.
- A temporary Administrative Assistant has been hired for the RWS office (up to 15 weeks) and they can provide clerical support as required.

Top Management noted that as part of the ongoing Continual Improvement of the EMS/QMS, a reprioritization of the CAF tracking items should take place regularly to ensure that the highest priority items are dealt with in a timely manner. High priority items would be health and safety related items, and regulatory in nature. Medium priority items could be linked to the Customer Level of Service (CLOS) measures. Low priority items would be opportunities for improvement.

Action Item: A. Tanashi to assign a priority to CAF items when being entered into the spreadsheet with input from D. Rodrigues and/or E. McLeod. Deadline: December 31, 2017.

15. Huron & Elgin: Operational Plan Currency, Content and Updates

With the implementation of the EDMS and the standardization of procedures between Huron and Elgin, the QMS Operational Plans and associated documents should be much easier to update and approve going forward. In the next 30 – 60 days the full implementation of the EDMS should be accomplished. In future we will try to leverage the new EDMS for new processes.



Agenda Item # Page #

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File No. E27/2017

Next Meeting: October 13, 2017, 9:00am, RWS Boardroom

Note: Agenda Items # 16 – 21 will be carried forward.

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APPENDIX B: QMS INTERNAL AUDIT REPORT SUMMARY (JUNE 19 & 26, 2017)

**QUALITY MANAGEMENT SYSTEM (QMS)
INTERNAL AUDIT**



Audit Dates: June 19 and June 26, 2017

Auditors: Erin McLeod, Quality Assurance & Compliance Manager,
Regional Water Supply
Arlene Tanashi, Compliance Coordinator, Regional Water Supply

Audit Purpose:

The purpose of the audit was to verify conformance with the Ontario Drinking Water Quality Management Standard (DWQMS) for the Elgin Area Primary Water Supply System (EAPWSS). Internal audits ensure the QMS is being continually improved.

Non-conformances and opportunities for improvement are listed below.

Auditor Qualifications:

Erin McLeod has completed a training course in DWQMS Internal Auditing (see Certificate in Appendix C) and is a Certified Engineering Technologist.

Arlene Tanashi has completed an Internal Auditing for the DWQMS course (see Certificate in Appendix C).

Methodology:

The Internal Audit was conducted as outlined in Procedure EA-ADMIN-1200 (INTERNAL AUDIT) of the QMS and was comprised of a conformance review of the facilities and limited to the operation of the water supply system by the contracted operating authority, Ontario Clean Water Agency, since the last Internal Audit conducted May 18, 2016.

Note: The audit was conducted through a review of a sampling of documents, limited interviews and observations by the auditors to demonstrate conformance with the DWQMS Version 2.0 February 2017. The review and audit should not be construed as a complete and comprehensive review of all aspects/risks and all documents.

Findings:

The following is a summary of the audit findings, including non-conformances and opportunities for improvement. The detailed audit checklists are attached for further information.

- Appendix A: EF-ADMIN-1201 DWQMS Internal Audit Checklist (Erin McLeod)
- Appendix B: EF-ADMIN-1201 DWQMS Internal Audit Checklist (Arlene Tanashi)

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- Appendix C: Internal Auditor Certificates Erin McLeod and Arlene Tanashi

Definitions:

- A non-conformance (NC) is a non-fulfillment of a requirement.
- An opportunity for improvement (OFI) describes a requirement that can be more effectively addressed.

Areas Visited:

- Elgin Water Treatment Plant, 43665 Dexter Line, Central Elgin
- EMPS Valve House and Terminal Reservoir, 490 South Edgeware Road, Central Elgin

Interviews Conducted:

- Blair Tully – General Manager (OCWA)
- Simon Flanagan – Senior Operations Manager (OCWA)
- Erin McLeod – Quality Assurance & Compliance Manager (RWS)
- Denny Rodrigues – Safety, Process and Compliance Manager & QMS Representative (OCWA)
- Mark McKenzie – Operator (OCWA)
- Dave Catrysse – Operator (OCWA)
- Tyler Johnson – Operator (OCWA)
- Kate Dayman – Administrative Assistant (OCWA)

Summary of Findings

Positive (QMS Representative; Commitment and Endorsement): The QMS Representative, Senior Operations Manager and General Manager (Top Management) have clearly demonstrated leadership and commitment with respect to the QMS. The Senior Operations Manager was able to provide all audit requirements in place of Team Lead, Operations and Compliance.

Positive (Competencies): The Operators In Training (OITs) interviewed during the audit were very knowledgeable considering the relatively short time they had been on staff.

Positive (Competencies; Emergency Management): The new chlorine training equipment on site offers added benefits and value for operator competency and emergency management.

Positive (Emergency Management): The new chlorine tonner actuators and emergency stop buttons are noted as an improvement for emergency preparedness and response.

Positive (Continual Improvement): It was evident throughout the Internal Audit process that Continual Improvement had been taking place since the last Internal Audit.

Non-Conformance (NC)

Element 16 Sampling, Testing and Monitoring

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NC# 1: EF-ADMIN-2056 Weekly Sample Sign-off Calendar Rev#4 dated Nov 14, 2016. A change had been made to form but there was no evidence of approval of the change and the new revision was not incorporated into the EMS/QMS Manual. Control of this document was lost.

Opportunities for Improvement (OFI)

Element 5 Document and Records Control

OFI #1: Consider the document control (numbering) for EF-ADMIN-2400 Contingency Plan Review/Test Summary Form (Rev. 0, dated May 14, 2014) as this is not related to EA-ADMIN-2400 (Risk Assessment), rather it is related to an emergency contingency procedure.

OFI #2: The Summary of Risk Assessment & Risk Assessment Outcomes (rev. 7, dated July 6, 2016) references in several areas a “UV Control SOP” which no longer exists.

OFI #3: Hazard Analysis (Risk Assessment) & Critical Control Points Procedure (EA-ADMIN-2400), rev. 18 dated January 30, 2017, includes two references to the Emergency Management Element, incorrectly referencing it as Element 16 instead of Element 18.

OFI #4: The new sampling forms associated with the RMF (RMF – Operator’s Daily Lab Sheet EF-ADMIN-2057, rev. 4, May 30, 2017, and RMF Weekly Sample Sign-off Calendar EF-ADMIN-2058, rev. 0, June 7, 2017) are not linked back to the Sampling and Lab Analysis Procedure (EA-ADMIN-2050, rev. 17, Sept. 18, 2015).

Element 7 Risk Assessment

OFI #5: No update to include consideration of the MOECC’S document “Potential Hazardous Events for Municipal Residential Drinking Water Systems” dated February 2017. At the next scheduled Risk Assessment update, consider all potential hazardous events. There are currently some gaps.

OFI #6: The risk assessment has not been updated to reflect the new Residuals Management Facility (RMF).

OFI #7: Consider updating references to the associated documents in procedure EA-ADMIN-2400 Hazard Analysis (Risk Assessment) & Critical Control Points, rev. 18, Jan. 30, 2017.

Element 10 Competencies

OFI #8: Several operators (OITs) had not yet received mandatory fire extinguisher training. Consider how new staff receive mandatory training when their start date falls in between the regularly scheduled training frequency.

Element 11 Personnel Coverage

OFI #9: Consider the process for circulating the shift schedule. The personnel coverage procedure states the shift schedule is located in the control room. In actuality, there are additional copies located

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in the RMF control room and lunch room, and it is also circulated by email. Not all copies viewed during the audit had the same approved date.

Element 12 Communications

OFI #10: Not all contractors and delivery drivers on site during the audit had signed the Visitor Sign-In Log Form.

Element 13 Essential Supplies and Services

OFI #11: Not all contractors on site at the time of the audit had received the orientation and signed off on the required Subcontractor and Supplier Sign-Off Form (EF-ADMIN-1700).

OFI #12: Procedure EA-ADMIN-1700 (Subcontractor and Supplier Requirements) has not been updated to reflect the use of new chemicals in the RMF (sodium bisulphite and various polymers).

Element 16 Sampling, Testing and Monitoring

OFI #13: Consider reviewing how operators ensure that lab data is entered into WaterTrax if the lab result is not entered during operator's shift.

OFI #14: Consider closing the loop in the documented procedure EA-ADMIN-2050 Section 9.0 regarding storm samples, as to where the storm sample results are recorded.

Element 17 Measurement and Recording Equipment Calibration and Maintenance

OFI #15: Consider tagging the three regulatory analyzers in the RMF (one chlorine analyzer and two TSS analyzers) to assist with personnel being aware of their importance. This relates to procedure EA-ADMIN-2200 which references regulatory analyzers and their minimum testing frequency.

OFI #16: Consider how inconsistencies between sticker verifications and verification checks can be addressed in the future. There was evidence during the audit that a required verification was overdue.

OFI #17: Consider updating and clarifying procedure EA-ADMIN-2200 to reflect that EF-ADMIN-2201 Verification Certificate was created. There are currently separate certificates for Calibration and Verification in use.

Element 18 Emergency Management

OFI# 18: Ensure all personnel are aware of the location of the visual air quality monitoring warning signals (egs. South Storage Building and RMF dechlorination room) and the appropriate response procedures.

OFI #19: No evidence of follow up in relation to a completed form dated June 27, 2016 EF-ADMIN-2400 Contingency Plan Review/Test Summary Form (Rev. 0, dated May 14, 2014). No change was made to procedure ESOP-2-05 nor was outcome added to the corrective action tracking spreadsheet. Consider adding a reference to this form in procedure ECP-1.

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OFI #20: Consider regular checks of Emergency Shower and Eye Wash at Low Lift as the tag was blank/illegible. Protective covers on Eye Wash were not in use but dangling below.

Element 21 Continual Improvement

OFI #21: Consider the security policy and risk associated with a set of unknown/unlabelled keys found in the EMPS valve house.

OFI #22: Consider the purpose, use and compatibility of chemicals before storing them together in secondary containment (e.g. disinfectant, herbicide, and antifreeze stored together in north storage room).

OFI #23: Consider undertaking another review/process internal audit of just the RMF in future months, to ensure all elements of the DWQMS are fully addressed.

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APPENDIX C: EMS INTERNAL AUDIT REPORT SUMMARY (AUGUST 2-3, 2017)

**ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)
INTERNAL AUDIT**



Audit Dates: August 2 and 3, 2017

Auditors: Erin McLeod, Quality Assurance & Compliance Manager,
Regional Water Supply
Arlene Tanashi, Compliance Coordinator, Regional Water Supply

Audit Purpose:

The purpose of the audit was to verify conformance with the ISO 14001:2015 Environmental Management Systems standard for the Elgin Area Primary Water Supply System (EAPWSS). Internal audits ensure the EMS is being continually improved.

Non-conformances and opportunities for improvement are listed below.

Auditor Qualifications:

Erin McLeod has completed an ISO 14001:2004 training course in Internal Auditing and is a Certified Engineering Technologist. In addition, ISO 14001:2015 Transition and Top Management training has been completed (see Certificates in Appendix C).

Arlene Tanashi has completed an ISO 14001:2015 training course in Internal Auditing. In addition, ISO 14001:2015 Transition and Top Management training has been completed (see Certificates in Appendix C).

Methodology:

The Internal Audit was conducted as outlined in Procedure EA-ADMIN-1200 (Internal Audit) of the EMS and was comprised of a conformance review of the facilities and limited to the operation of the water supply system by the contracted operating authority, Ontario Clean Water Agency, since the last Internal Audit conducted July 19 and 20, 2016.

Note: The audit was conducted through a review of a sampling of documents, limited interviews and observations by the auditors to demonstrate conformance with the ISO 14001:2015 Environmental Management Systems standard. The review and audit should not be construed as a complete and comprehensive review of all aspects/risks and all documents.

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Findings:

The following is a summary of the audit findings, including non-conformances and opportunities for improvement. The detailed audit checklists are attached for further information.

- Appendix A: EF-ADMIN-1200 EMS Audit Checklist (Erin McLeod)
- Appendix B: EF-ADMIN-1200 EMS Audit Checklist (Arlene Tanashi)
- Appendix C: Internal Auditor Certificates Erin McLeod and Arlene Tanashi

Definitions:

- A non-conformance (NC) is a non-fulfilment of a requirement.
- An opportunity for improvement (OFI) describes a requirement that can be more effectively addressed.

Areas Visited:

- Elgin Water Treatment Plant, 43665 Dexter Line, Central Elgin
- EMPS Valve House and Terminal Reservoir, 490 South Edgeware Road, Central Elgin

Interviews Conducted:

- Blair Tully – General Manager (OCWA)
- Simon Flanagan – Senior Operations Manager (OCWA)
- Erin McLeod – Quality Assurance & Compliance Manager (RWS)
- Denny Rodrigues – Safety, Process and Compliance Manager & EMS Representative (OCWA)
- Glenn McEown – Team Lead Operations and Compliance (OCWA)
- Dave Cattrysse – Operator (OCWA)
- Derek Locker – Operator (OCWA)
- Kate Dayman – Administrative Assistant (OCWA)

Summary of Findings

Positive (5.1 Leadership and commitment): The EMS Representative, Senior Operations Manager and General Manager (Top Management) have clearly demonstrated leadership and commitment with respect to the EMS.

Positive (7.2 Competence; 8.2 Emergency preparedness and response): The new chlorine training equipment on site offers added benefits and value for operator competency and emergency management.

Positive (8.2 Emergency preparedness and response): The new chlorine tonner actuators and emergency stop buttons are noted as an improvement for emergency preparedness and response.

Positive (10.3 Continual improvement): It was evident throughout the Internal Audit process that continual improvement had been taking place since the last Internal Audit.

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Positive (10.3 Continual Improvement): Since the last site visit, it was evident that the Residuals Management Facility (RMF) sodium bisulphite area had been improved in the areas of organization (Empty and Full drum tagging system), materials handling equipment (ramps and trolleys) and housekeeping.

Positive (10.3 Continual Improvement): Since the last site visit, three regulatory analyzers in the RMF had been tagged. Some Asset ID numbers had been added.

Non-Conformance (NC)

8.1 Operational planning and control

NC #1: The “Valve House Dechlorination Use and Inventory Sheet” indicates that there are times when the tank is found empty, meaning dechlorination did not take place for periods of time. Consider the procedure and instructions to the employees for a threshold on when to refill the tank.

Opportunities for Improvement (OFI)

4.3 Determining the scope of the EMS

OFI #1: Consider reviewing, redefining and updating the Scope in the EMS Manual to better align wording with ISO 14001:2015 standard requirements.

4.4 Environmental management system

OFI #2: Update EMS Manual (“road map” to the EMS) to reflect new requirements references/wording as they relate to the ISO 14001:2015 standard taking into consideration knowledge gained in 4.1 & 4.2.

6.1.2 Environmental aspects

OFI #3: Consider updating EA-ADMIN-1100 Aspects & Impacts Assessment Procedure to incorporate ISO 14001:2015 wording to “Consider Life Cycle Perspective”.

6.2.1 Environmental Objectives

OFI #4: Consider updating column titled “Objective, Target, Programme” in Aspects & Impacts Spreadsheet last revised February 27, 2017.

7.3 Awareness

OFI #5: Provide ISO 14001:2015 refresher training to all employees.

OFI #6: Review and update the training materials for new hire orientation to reflect ISO 14001:2015.

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OFI #7: Consider adding the RMF chemicals (polymers, sodium bisulphite) to the list of suppliers and services in EA-ADMIN-1700.

7.5.2 Creating and Updating

OFI #8: Consider updating the EMS documentation with ISO 14001:2015 terminology.

7.5.3 Control of documented information

OFI #9: Consider upgrading the EMS Manual and corresponding procedures to the new format (10 clauses) of ISO 14001:2015.

8.1 Operational planning and control

OFI #10: Consider updating Procedure EA-PROC-2500 (Sodium Bisulphite Transfer and Handling), to include instructions on how/when to complete the “Elgin RMF Sodium Bisulphite Inventory Sheet” found in the chemical room. The inventory sheet indicates the number of full/empty barrels on site, but the data is inconsistent with the actual number of barrels on site.

OFI #11: During the audit tour it was found that the cap and plug had been removed and left open on a full barrel of sodium bisulphite in storage in the RMF. This created a potential spill or H&S hazard situation. Note that this was corrected at the time of the audit tour.

OFI #12: The “Valve House Dechlorination Table” is very specific as to how much Captor is to be added when filling the tank, but in reality the method used is not that accurately measuring volume. Consider simplifying the procedure.

OFI #13: Consider using proper WHMIS workplace labelling. #1 – RMF basement unlabeled 500 ml polyethylene bottle containing brownish liquid, #2 – unlabeled 4 L polyethylene jug in Maintenance shop containing dark brownish liquid, #3 – RMF unlabeled Nalgene wash bottles for deionized water.

8.2 Emergency preparedness and response

OFI #14: For the treated water reservoir overflow incident, the corresponding emergency standard operating procedure (ESOP-2-01 Reservoir Overflow) has not been reviewed/updated. There is no reference to reporting discharges to the MOECC Spills Action Center in this procedure.

OFI #15: Not all first aid kits, fire extinguishers and eye wash/shower station had received monthly checks.

- first aid kit High Lift area July 2017 check missed
- first aid kit on floor in south storage building was unmounted with no tag
- fire extinguisher in south storage building missed June & July 2017 checks
- shower at Low Lift July 2017 check missed; eye wash covers off
- Kubota vehicle in garage, no tag on fire extinguisher
- fire extinguisher required recharge but was not tagged as spare or out of service in High Lift area.

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9.1 Monitoring, measurement, analysis and evaluation

9.1.1 General

OFI #16: EMPS Dechlorination Monitoring; inconsistency in results being recorded on Work Orders for Total Chlorine readings measured at Location 1 and Location 2. Inconsistency in reporting results to Operator-In-Charge at EAPWSS for recording in the EMPS log book at EAPWSS.

OFI #17: EMPS Dechlorination Monitoring; consider a review of the monthly Scheduled Work Order Instructions.

OFI# 18: Low Lift area; review inconsistency with verification stickers for Chlorine Gas Detection systems in two locations.

9.3 Management Review

OFI #19: Consider updating EF-ADMIN-900 Management Review Tracking Matrix to reflect new requirements of the ISO 14001:2015 standard (10 Clauses).

To: Chair and Members
Elgin Area Primary Water Supply System Board of Management

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Meeting Date: October 5, 2017

Subject: Capital Status Report

RECOMMENDATION

That the following actions be taken with regard to Elgin Area Primary Water Supply System capital projects:

- a) That this report regarding the status capital projects **BE RECEIVED** for information; and,
- b) That projects EA4082 Filter 1, 2, & 3 Replacement, EA4105 Low Lift Control Valves, EA4114-16 Annual Maintenance (2016), EA4118 Low Lift Sluice Gate Repair, EA4127 Division Vehicle, and EA4155 Pilot Plant **BE CLOSED**, with the surplus funds in the approximate amount of \$1,026,876 be released to the Board's Reserve Funds.

DISCUSSION

The Capital Project Status Report, attached to this report as Appendix A for the Board's information, provides a brief overview of the status of current capital projects for the Lake Huron Primary Water Supply System. This report is provided for the general information of the Board.

The status report is divided into four categories of projects, namely:

- 1. **Ongoing Projects:** This section provides a summary list of all projects which are funded by the Board through the Capital Budget and which are currently in-progress. Board funded projects are typically for the replacement or upgrade of existing assets, the construction of new assets, or engineering studies and assessments, as approved by the Board.

Under the terms of the Service Agreement with the contracted operating authority, the Board is also required to pay for some maintenance/repair projects. The benchmark used in the operating contract is that if the value of the material and any contracted labour is over \$30,000, the project is considered Capital Maintenance and the contracted operating authority would fund the first \$30,000, with the balance funded by the Board. Accordingly, the Board maintains an annual "fund" within the Board's capital budget to pay for these projects as they arise.

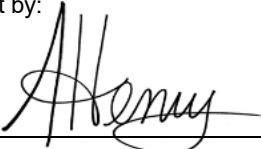
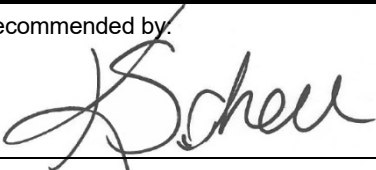
- 2. **Completed Projects - Release Surplus to Reserve Funds:** This section provides a summary list of all projects which are presently completed, but do not require additional funds from that budgeted. Should the Board approve the closure of the listed projects, it is the recommendation of staff to release the surplus funds, if any, to the Reserve Fund.

Completed Projects – Reduce Debenture: In the case where the project is funded through the issuance of a debenture, should the Board approve the closure of the listed project it is the recommendation of staff to reduce the previously projected and corresponding debenture for the project(s).

- Completed Projects - Additional Funding Required:** This section provides a summary list of all projects which are presently completed, but require additional funds from that originally approved. Should the Board approve the closure of the listed projects, it is the recommendation of staff to provide the required additional funding from the Board’s Reserve Fund.

EA4155 Pilot Plant Project

The development and construction of a Pilot Plant was approved in the 2016 Capital Budget, conditional on the completion of a business case for the Board’s consideration which outlines the operational uses and potential benefits of the initiative. Benefits have been identified that extend well beyond the operational efficiencies and optimization opportunities previously discussed with the Board, including certified operator training, research and educational partnerships with colleges and universities, and public education. Given the current financial circumstance identified in the Financial Plan approved earlier this year with specific regard to the debt capacity of the system and reserve fund balances between 2018 and 2020, along with ongoing discussions with other stakeholders in order to better quantify and qualify consequential benefits, Board staff are not in a position to recommend proceeding with this project at this time. It is proposed that this project be cancelled, returning the entire project budget to the reserve fund, and a comprehensive business case be presented in a future Capital budget for the Board’s consideration.

<p>Report by:</p>  <hr/> <p>Andrew Henry, P. Eng. Division Manager, Regional Water Supply</p>	<p>Report recommended by:</p>  <hr/> <p>Kelly Scherr, P.Eng., MBA, FEC Chief Administrative Officer</p>
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Attachments: Capital Project Status Summary

APPENDIX A: CAPITAL PROJECT STATUS SUMMARY

A.1 Ongoing Projects

PROJECT NO.	PROJECT	APPROVED BUDGET	EXPENDED TO DATE*	STATUS
EA4023	Residue Management Facility	\$30,200,000	\$26,682,916	Construction substantially complete. Deficiencies being addressed
EA4039	Record Drawings & Documents	\$175,000	\$150,252	Ongoing multi-year project
EA4073	Plant Instrumentation	\$411,608	\$411,308	Annual project ongoing
EA4077	Asset Management Plan	\$375,000	\$330,268	Asset Plan completed.
EA4085	IT Security Upgrades	\$604,000	\$256,489	Project ongoing
EA4086	SCADA Network Communications	\$50,000	\$10,207	Project ongoing
EA4095	WTP Interior Renovations	\$321,500	\$275,825	Project ongoing
EA4097	Electronic Document Management System	\$100,000	\$40,361	Project ongoing
EA4104	Annual IT Mtce. Allowance	\$200,000	\$91,065	Project ongoing
EA4107	Concrete Crack Injection	\$60,000	\$40,035	Project undertaken through the operating authority as opportunities arise
EA4108	Revenue Meter Replacement Program	\$100,000	\$28,053	Project ongoing
EA4109	Plant Reservoir Repairs	\$400,000	\$260,116	Project ongoing
EA4114-17	Annual Maintenance (2017)	\$100,000	\$11,387	Annual Program
EA4115	Master Key System	\$80,000	\$51,505	Project ongoing
EA4119	WTP Tunnel Repair	\$50,000	\$0	Project initiated
EA4124	Control Systems Study	\$100,000	\$53,167	Project complete. Awaiting final invoice
EA4125	Low Lift 4kv Switchgear	\$700,000	\$317,666	Project ongoing
EA4126	Filter Room HVAC Modifications	\$75,000	\$10,649	Project initiated
EA4128	High Lift Switchgear	\$1,200,000	\$56,063	Project initiated
EA4129	Server Room Fire Suppression	\$30,000	\$0	Project to be initiated
EA4131	Cell 1 Isolation Valve	\$100,000	\$0	Project to be initiated
EA4132	Alum Storage Tanks	\$50,000	\$2,414	Project initiated
EA4133	Coagulation Optimization Study	\$25,000	\$0	Project initiated
EA4134	Security Assessment & Audit	\$25,000	\$41,744	Project complete. Awaiting final invoice
EA4140	Drain Pipe Replacement	\$60,000	\$54,506	Project undertaken through the operating authority as opportunities arise
EA4154	Polymer System Upgrades	\$300,000	\$22,466	Project initiated
TOTAL		\$35,892,108	\$29,198,462	



A.2 Completed Projects – Release Surplus to Reserve Funds (\$1,026,876)

PROJECT NO.	PROJECT	APPROVED BUDGET	EXPENDED TO DATE*	STATUS
EA4082	Filter 1, 2, & 3 Replacement	\$3,542,000	\$3,392,033	Project complete
EA4105	Low Lift Control Valves	\$500,000	\$459,702	Project complete
EA4114-16	Annual Maintenance (2016)	\$100,000	\$70,464	Annual Program complete
EA4118	Low Lift Sluice Gate Repair	\$50,000	\$46,398	Project complete
EA4127	Division Vehicle	\$15,000	\$11,527	Project completed
EA4155	Pilot Plant	\$800,000	\$0	Project on hold
TOTAL		\$5,007,000	\$3,980,124	

A.3 Completed Board Projects – Additional Funding Required (\$0)

PROJECT NO.	PROJECT	APPROVED BUDGET	EXPENDED TO DATE*	STATUS
TOTAL		\$ 0	\$ 0	

Notes:

* Expended as of February 21, 2017

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To: Chair and Members
Elgin Area Primary Water Supply System Board of Management

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Meeting Date: October 5, 2017

Subject: Clearwell/Reservoir Drainage Improvements Project

RECOMMENDATION

That the Board of Management **RECEIVE** this report for information regarding the status of the Clearwell/Reservoir Drainage Improvements project at the Elgin Area Water Treatment Plant.

PREVIOUS AND RELATED REPORTS

October 2, 2014	Current Operating and Capital Budget
March 9, 2017	Clearwell/Reservoir Drainage Improvements – Tender Award

BACKGROUND

The initial condition survey undertaken by the contracted operating authority in 2012 identified the risk of infiltration through the clearwell and reservoir roof at the water treatment plant due to its poor condition. There is also ponding of water noted on top of the reservoir after rainfall and snowmelt events for an extended period of time.

Board staff retained the services of AECOM in December 2015 to complete design and tender document preparation for the Clearwell/Reservoir Drainage Improvements project.

AECOM finalized the design in March 2016 which includes but is not limited to:

- Establishing surface and subsurface drainage for standing water above the clearwell and reservoir areas;
- Repair of minor cracks in the deck and/or hatches of the structure to ensure its integrity; and
- Waterproofing and insulation of the structure to reduce concrete degradation and the potential for groundwater infiltration.

On March 9, 2017 the Board accepted the tender by Bronte Construction Ltd. to undertake the improvements.



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DISCUSSION

On May 15, 2017, Bronte Construction Ltd. mobilized to the site and began stripping the topsoil off of the clearwell and reservoir. After the structure was exposed and cleaned, AECOM carried out a visual and delamination survey for the concrete slab, access hatch and wall surfaces. The survey was completed utilizing a combination of hammer sounding and chaining techniques. All concrete surfaces were in fairly good condition with a small number of light spalls near the edges of the concrete roof slab however are not a concern to the structural integrity of the roof slab and were subsequently repaired by the contractor. No exterior cracks in the concrete slab were observed during the inspection.

By mid-June the contractor had commenced the installation of the waterproofing membrane and insulation on the structure. After the waterproofing was inspected the contractor proceeded with the installation of the drainage system and subsequent backfilling of the work area.

The project was substantially complete as of July 12, 2017, approximately 2 weeks ahead of schedule, and minor deficiencies are currently being addressed.

PROJECT FINANCIAL STATUS

Summary of Projected Costs

The following summary of estimated costs is provided for review and will be confirmed throughout the project:

Engineering Design & Tender Preparation	\$ 29,103
Construction Administration & Inspection	\$ 71,925
<u>Construction</u>	<u>\$ 254,217</u>
Total Projected Costs	\$ 355,245
 Approved Budget	 \$ 400,000

Summary of Expenditures Incurred to Date as of: August 25, 2017

The following summary of expenditures incurred to date:

Engineering Design & Tender Preparation	\$ 29,102
Construction Administration & Inspection	\$ 35,246
<u>Construction</u>	<u>\$ 195,770</u>
Total Expenditures	\$ 260,118
 Projected Budget Surplus (Deficit)	 \$ 44,755



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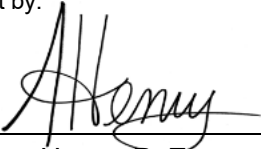
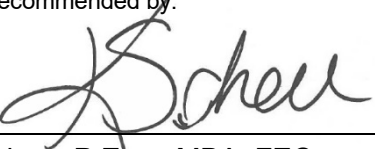
File No. E27/2017

CONCLUSION

The initial condition survey undertaken by the contracted operating authority in 2012 identified evidence of possible infiltration through the clearwell and reservoir roof at the water treatment plant due to its poor condition. Improvements to sustain the integrity and extend the life of the structure were made in the spring/summer of 2017 through the:

- Repair of minor cracks in the deck and/or hatches of the structure;
- Construction of a drainage system for surface water; and
- Installation of waterproofing and insulation of the structure.

Information for this report was provided by Billy Haklander, Environmental Services Engineer.

Report by:  _____ Andrew Henry, P. Eng. Division Manager, Regional Water Supply	Report Recommended by:  _____ Kelly Scherr, P.Eng., MBA, FEC Chief Administrative Officer
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To: Chair and Members
Elgin Area Primary Water Supply System Board of Management

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Meeting Date: October 5, 2017

Subject: Low Lift 4.16kV Motor Control Centre Replacement

RECOMMENDATION

That the Board of Management **RECEIVE** this report for information regarding the status of the Low Lift 4.16kV Motor Control Centre Replacement project at the Elgin Area Water Treatment Plant.

PREVIOUS AND RELATED REPORTS

- October 1, 2015 2016 Current Operating & Capital Budgets
- October 6, 2016 Low Lift 4.16kV Motor Control Centre Replacement – Tender Award

DISCUSSION

The Elgin Area Water Treatment Plant low lift pumping station receives electricity via the 4,160 volt feeder line from the water treatment plant’s generator building. The Motor Control Centre (MCC) located at the Low Lift building contains the various circuit breakers, fused load break switches, and four non-reversing starters for the low lift pumps. Based on the condition assessment of the existing MCC and existing standby tie feeder to the Low Lift PS, the Low Lift MCC was scheduled for replacement in the 2016 Capital Budget with new space-efficient MCC equipment, including new motor protection relays.

Stantec Consulting Ltd. was awarded the engineering assignment including design, tender preparation, construction and post construction services associated with this project. In October 2016, the Board awarded the construction contract to Selectra Inc. having submitted the lowest bid which meets the specifications for this project.

Selectra Inc. commenced construction in January 2017 and the project was substantially performed as of May 23, 2017 with minor deficiencies currently being addressed.



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PROJECT FINANCIAL STATUS:

Approved Budget **\$ 700,000**

Projected Costs

The following summary of estimated costs is provided for review and will be confirmed throughout the project:

Design & Construction Administration \$ 63,907

Construction \$ 278,470

Total Projected Costs **\$ 342,377**

Expenditures Incurred as of:

August 25, 2017

The following summary of expenditures incurred to date:

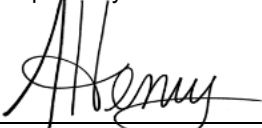
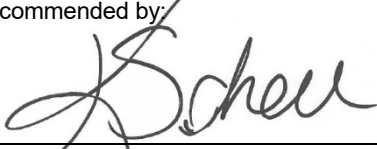
Design & Construction Administration \$ 54,265

Construction \$ 211,720

Total Expenditures **\$ 265,985**

Projected Budget Surplus/Deficit **\$ 357,623**

Information for this report was provided by Billy Haklander, Environmental Services Engineer.

<p>Report Prepared by:</p>  <hr/> <p>Andrew Henry, P. Eng. Division Manager, Regional Water Supply</p>	<p>Report Recommended by:</p>  <hr/> <p>Kelly Scherr, P.Eng., MBA, FEC Chief Administrative Officer</p>
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To: Chair and Members
Elgin Area Primary Water Supply System Board of Management

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Meeting Date: October 5, 2017

Subject: High Lift Switchgear Replacement Project

RECOMMENDATION

That the Board of Management **RECEIVE** this report for information regarding the status of the High Lift Switchgear Replacement project at the Elgin Area water treatment plant.

PREVIOUS AND RELATED REPORTS

October 6, 2016 Current Operating & Capital Budgets
March 9, 2017 High Lift Switchgear Replacement – Administrative Award

BACKGROUND

The existing electrical switchgear for the plant's high lift pump system are original to the plant construction, are in poor condition, and require immediate replacement. To facilitate construction in the winter of 2018 during low demand periods, the Board authorized the Chair and Chief Administrative Officer to execute an agreement with an electrical contractor to replace the switchgear provided that their bid is within the approved budget and complies with the tender process, specifications and project requirements.

DISCUSSION

Stantec Consulting Ltd. finalized the detailed design and Tender # 17-87 was issued on June 22, 2017. Compliant bids were received on the closing date of 2:00p.m. Wednesday, August 2, 2017, from five (5) electrical contractors. The acceptable bids received are summarized as follows:

Contractor	Tender Price (excluding HST)
Selectra	\$941,932.20
Lexsan Electric	\$951,082.00
Hardie Industrial Services	\$1,038,790.69
Roberts Onsite	\$1,088,670.00
Tiltran Power Services	\$1,366,066.00



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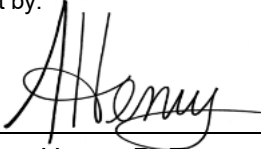
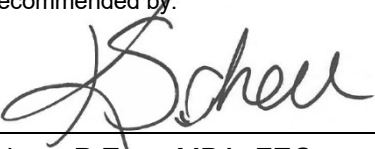
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File No. E27/2017

CONCLUSION

On August 2, 2017, Selectra Inc. submitted a bid within the approved project and compliant the tender process, specifications and project requirements. In accordance with the Board's approval in March 2017, the Chair and Chief Administrative Officer have executed an agreement for the construction of the High Lift Switchgear Replacement project with Selectra Inc. The project is expected to be complete before the summer of 2018.

Information for this report was provided by Billy Haklander, Environmental Services Engineer.

Report by:  _____ Andrew Henry, P. Eng. Division Manager, Regional Water Supply	Report Recommended by:  _____ Kelly Scherr, P.Eng., MBA, FEC Chief Administrative Officer
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To: Chair and Members
Elgin Area Primary Water Supply System Board of Management

From: Kelly Scherr, P.Eng., MBA, FEC
Chief Administrative Officer

Meeting Date: October 5, 2017

Subject: 2018 Operating & Capital Budgets

RECOMMENDATION

That the following actions be taken by the Board of Management for the Elgin Area Water Supply System with regard to the 2018 Operating and Capital Budgets:

- a) The Board APPROVE the 2018 Operating Budget in the total amount of \$11,926,000 as presented;
- b) The Board APPROVE the 2018 Capital Budget in the total amount of \$2,115,000 as presented;
- c) The Board RECEIVE the 2019 to 2027 Capital Forecast for information;
- d) The Board APPROVE the 2018 rate for water of \$0.8047 per cubic meter; and,
- e) The Board RECEIVE the 2016 to 2022 Flow and Financial Analysis for information.

EXECUTIVE SUMMARY

The proposed operating and capital budgets present a balanced cost and revenue projection for 2018, and are consistent with the recently approved Financial Plan. The proposed water rate for 2018 of 80.47 cents per cubic meter of water will adequately address capital, operating and administrative requirements as currently projected. The Financial Plan continues to be a key element in the long term strategic approach that addresses both infrastructure and operating issues, and ensure fiscal responsibility to maintain a reliable and sustainable water supply to the benefiting municipalities and consumers.

Cost projections presented in the 2018 budget include the operating costs within the extended term of the agreement with the contracted operating authority, which currently incorporates an estimated cost for the operation of the new Residuals Management Facility.

The 2018 Capital Budget builds on the Asset Management Plan, and utilizes the Customer Level of Service framework and Risk Mitigation strategy recently approved by the Board. This includes the utilization of the new business case process to better quantify anticipated costs, savings, and service impacts to the water supply system.

The projects and initiatives in the 2018 Capital Budget are presented in this report within two primary groupings; lifecycle projects that maintain the existing levels of service, and service improvements which address enhancements to levels of service, support growth of the system and water demands, address regulatory changes, or increase efficiency. A proposed capital project may touch, in part, all of these aspects, however they are presented in the budget according to their respective primary driver.

PROPOSED 2018 OPERATING BUDGET

2018 Water Rate

It is proposed in this budget that the water rate for the wholesale of water to the benefiting municipalities be set at \$0.80.47 per cubic meter (80.47¢ per cubic meter). In responding to regulatory, operational and inflationary pressures, this proposed 2018 rate represents a 4% increase from the current rate and is consistent with the projected rate increase previously reported to the Board in the 2017 Budget and the recently approved Financial Plan.

In order to address the short term fiscal demands of the water system, the proposed capital program for 2018 and the next two years has been minimized to only essential investments. The proposed 2018 capital program is discussed later in this report for the Board’s information and reference.

As reported in the previous 2017 budget, and a result of the significant short-term financial constraints, the Financial Plan recommended a 5% increase in 2017, 4% in each of 2018 and 2019, and 3% in 2020 and beyond. This previous recommendation was necessary to balance the short-term financial constraints and borrowing capacity of the system, against the long-term investment needs and sustainability of the water system.

2018 Budget Volume

Allowing for the current rate of population and water demand growth within the benefiting municipalities, as well as anticipated impacts of water conservation, the projected 2018 treated water volume included in the budget of 14.81 million cubic meters represents a marginal 0.34% increase compared with the 2017 budgeted volume, and approximately 1% higher than the anticipated 2017 actual supplied volumes by year-end.

Approved 2017 budget volume	14,756,500 m ³
Anticipated 2017 year-end volume	14,658,971 m ³
Proposed 2018 volume	14,806,500 m ³

A conservative estimate of volume was utilized for the 2018 budget due to revised long-term projected consumption in Elgin County, but remains reflective of long-term system consumption patterns throughout the region. The City of London continues to take the minimum contracted block volume of water on a daily basis of approximately 22.7 million litres.

Although lower total annual supplied water volumes do cause short-term financial pressures, they are typically beneficial in the very long-term due to the deferral of growth-related works such as water treatment capacity expansions. Water demand projections and anticipated capital works are reviewed regularly to ensure capital projects are appropriately coordinated and timed, and will be reviewed again during future revisions to the Master Water Plan and Asset Management Plan. Further, the recently adopted business case process as part of the Asset Management Plan promotes a risk mitigation and level of service strategy which addresses the appropriate timing of necessary projects.

Operating Expenditures

The two single largest operating costs for the water supply system is the contract costs for the operation and maintenance of the water supply system with the Board's Operating Authority, the Ontario Clean Water Agency ("OCWA"), as well as the purchase of power for the system. The 2018 projected operating costs are budgeted at approximately \$5.3 million, reflecting a 7.2% projected increase compared to the 2017 budget. Of the \$5.3 million, energy comprises approximately 28.1% of operating expenditures.

The net increase in operating costs is largely attributed to the addition of the Residuals Management Facility (RMF). The new facility began full operation in early 2017, and the estimated costs of operating, maintaining and repairing the new facility is included into the budget projections. Other savings within the operating budget have reduced the net impact of the addition of the RMF operation.

The Service Fee currently paid to OCWA is solely comprised of a general component (reflecting labour, material and chemical costs, etc.) paid by the Board. The electrical cost is paid directly by the Board resulting in significant savings in handling costs previously paid to the contracted operating authority. As electricity can be highly variable on a year-over-year basis, the risk of market volatility has summarily been assumed by the Board and mitigated through the Board's energy procurement strategy.

Notwithstanding the long-term benefits being realized with the deferral of growth-related capital, it is anticipated that the short-term cost drivers will continue to be the escalating operating costs and capital renewal and reinvestment requirements of the fifty year old aging infrastructure.

The Board previously received and accepted an energy, conservation and pump optimization study report which reviews possible cost saving and efficiency measures related to the procurement and usage of electrical energy and the associated pump strategy for the system. A number of efficiency recommendations were received and incorporated into the Asset Management Plan and Financial Plan, which require the development of a business case to better quantify anticipated costs, savings, and service impacts. The proposed capital plan has started to incorporate some of the energy efficiency projects, with further projects to be considered in future.

Administration and Other Expenditures

The Administration and Other Expenditures projected for the 2018 budget of approximately \$1.48 Million represents a \$124,000 net increase over the 2017 budget amount. This net increase is due to numerous changes to the water supply system, summarized as follows:

- Overhead and service costs: the administration charges paid to the City of London for such services as accounts payable/receivable, clerical support, and budget administration was increased to reflect current actual costs to the city.
- Wage adjustments: An allowance for wage adjustments has been carried in the proposed 2018 budget to accommodate potential adjustments, including overtime and adjustments to benefits.
- An allowance for additional staff, as previously approved by the Board, in support of the implementation of improvements to the business operation of the Board, the implementation of the asset management program, and changes to the associated business systems required.

- Anticipated increase in insurance premiums for General Liability Insurance, Directors and Officers Insurance, and Property Insurance.

Security Audit

The recently completed and approved Security Audit and Threat Risk Vulnerability Assessment recommended a number of capital and operating investments to the regional water system, including staffing resources. The proposed 2018 Operating Budget currently does not include any anticipated staffing changes specifically related to security. Board staff are in the process of completing the development of an implementation and resource plan, and a comprehensive report will be presented to the Board at a future meeting including any recommended changes to the 2018 Operating Budget.

PROPOSED 2018 CAPITAL PLAN

The Proposed 2018 Capital Budget reflects a number of projects to address capital improvements and critical reinvestment in the water supply system's assets, as well as regulatory requirements, ongoing and proposed Board initiatives. Project specific summaries are provided in Appendix A of this report for the Board's information.

Financial Plan and Asset Management Plan

The recently approved Asset Management Plan and Financial Plan provided an assessment of anticipated projects, based on condition assessments, operational assessments provided by our contracted operating authority, and previously undertaken studies available at that time. In the development of the 2018 Capital Budget, a business case is created for each project which outlines the scope of the issue that needs to be addressed, options, cost estimates, and project dependencies. The business case process is linked with our Customer Level of Service framework and Risk Mitigation strategy in order to better prioritize and direct funds in a more strategic fashion and in consideration of financial constraints which may be experienced.

Within this framework, a capital project may be "lifecycle" in nature and required in order to maintain a level of service, and/or "service improvement" in nature which may address:

- Enhancement to the level of service (including safety and security);
- Support of system growth or growth in water demands;
- Address regulatory changes; or,
- Increase efficiency.

The level of capital investment will vary from year-to-year, most especially for projects related to system or water demand growth. The Asset Replacement Reserve is used for lifecycle projects, while the Capital Reserve is used for system improvements. A given project, in principle, may address multiple elements within the Customer Level of Service framework, and therefore may require the utilization of both the Asset Replacement Reserve (lifecycle) and the Capital Reserve (service improvement).

It is important to note that the anticipated projects outlined in the Asset Management Plan tend to be based on risk mitigation in the first five-year planning period, and systemic or age-related in nature for the remaining 25+ year planning period. In addition, the financial information presented in the Asset Management Plan is considered an unconstrained financial projection; meaning without consideration of such things as other operational needs and financial constraints (e.g. borrowing capacity) experienced by the water supply system.

The Financial Plan is utilized to incorporate the needs identified in not only the Asset Management Plan, but also the Master Water Plan (growth study) and other studies undertaken by the system, as well as the evolving operational and administrative needs of the system to better constrain the financial requirements and implications to the system. During the development of the annual budget the projections in the Financial Plan are measured and adjusted according to actual conditions, which will consequently affect the capital plan in each fiscal year.

2018 Capital Plan

The new Financial Plan approved by the Board recommends an average year-end balance for the Asset Replacement Reserve in the order of \$4.0 million. Although the actual investment and commitment rate may vary year to year, the current capital plan maintains the average investment rate as outlined in the Asset Management Plan and Financial Plan.

In contrast, the Capital Reserve is intended to grow significantly over time to provide a sufficient base for funding large growth-related projects in future. The balance of generational investment equity (utilization of reserves established by current users, versus debt incurred and paid by future users) has yet to be fully quantified, and will be addressed in future Master Water Plan and Financial Plan studies. There are no significant growth-related expenditures within the current planning period, and staff are satisfied that the issue of generational equity can be addressed within a reasonable timeframe.

Previously approved capital budgets provided a significant investment in existing and new infrastructure. As outlined in the Asset Management Plan, the next five-year planning period is largely comprised of lifecycle projects needed to address the now fifty year old water system.

Lifecycle Projects (Maintain LOS)

Proposed projects in the 2018 Capital Budget which address maintaining the system's level of service are:

- EA4073 Plant Instrumentation
- EA4108 Revenue Meter Replacement
- EA4132 Alum Storage Tanks
- Low Lift Service Water Connection
- Control Panel/Wire Cleanup
- Fluoride System Assessment
- Low Lift Pump #1 Rebuild
- Non-Revenue Meter Replacement
- EA4107 Concrete Crack Injection
- EA4118 Sluice Gate Repairs
- Service Water Piping Replacement
- High Lift Pump Replacement
- EMPS Cell 2 Access House Rehab
- Garage Door Replacement
- Low Lift Building HVAC

In addition to the above-noted capital projects, the 2018 Capital Budget includes EA4114 Annual Maintenance which funds, in part, maintenance and repair projects undertaken by the contracted operating authority, the Ontario Clean Water Agency. All maintenance and repairs of the system's assets are the obligation of the contracted operating authority to undertake in accordance with the Service Agreement. For activities of maintenance and repair where the value of the material and any contracted specialty service exceed \$30,000 (adjusted annually by CPI), the Board is responsible for the value of the work in excess of the \$30,000 (as adjusted). To facilitate this work, the Capital Budget includes an Annual Maintenance project which is utilized to fund this contractual obligation of the Board.

A summary of the capital projects are provided in Appendix A of this report.

Service Improvement Projects (Enhanced LOS, Growth, Regulator Changes, Efficiency)

Proposed projects in the 2018 Capital Budget which the primary driver is service improvements are:

- EA4039 Record Drawings & Documents
- EA4153 Backwash Pump Replacement
- Dissolved Oxygen Analyzer Installation
- EA4095 WTP Interior Renovations
- Security Upgrades
- Pre-Treatment Hydraulics Evaluation

A summary of the capital projects are provided in Appendix A of this report.

CAPITAL FORECAST

A number of capital projects are projected beyond the 2018 Capital Budget year, which will have an impact on the financial forecast and future water rates for the water system. Some of these capital projects were anticipated in previous budget forecasts, and are now inclusive of the recently completed Asset Management Plan and Financial Plan. As previously noted, staff undertake a complete business case assessment for each project to confirm the costs, timing, and priority of the project, consistent with our new Customer Level of Service framework and Risk Mitigation strategy. Initial efforts related to the development of business cases are focused on projects anticipated within the first five projected years (2018 to 2022), and then other projects and initiatives beyond 2022 thereafter.

The recently completed Residue Management Plant, Pipeline Twinning, and the Backup Generator projects had a significant impact on the water system's Reserve Fund requiring the use of debt for financing these projects. For this reason, it is increasingly important for the system to continue the implementation of the Financial Plan recently completed and presented to the Board for its consideration.

The next update to the Board's Master Water Plan is proposed for 2019, and the Asset Management Plan and Financial Plan is anticipated to be initiated in 2020.

FLOW AND FINANCIAL ANALYSIS

Included in the budget package is a forward projection of annual volumes and financial projections beyond 2018, and provides a summary analysis of one option for rate increases and the use of debt. This projection has incorporated the recommendations from the recently updated Financial Plan and revisions to the financial model.

The projected operating expense beyond 2018 assumes that the cost of operating the system under the new contract is consistent with the amended operating agreement with the Ontario Clean Water Agency to 2022. In addition, energy expenditures projected beyond 2018 have assumed a reasonable escalation of costs, tied to the anticipated annual volumes projected.

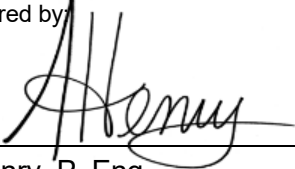
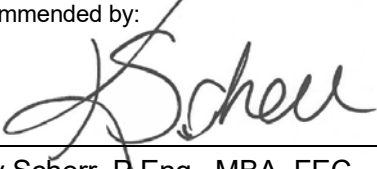
Conceptually, the Asset Replacement Reserve is required to provide a stable funding source for capital programs designed to replace, maintain and potentially extend the asset life to its full potential. Accordingly, the contribution to the Asset Replacement Reserve fund year-over-year should be relatively consistent, on average, with minor variations accounted for as the Asset Management Plan is implemented.

Conversely, the Capital Reserve Fund is intended for new growth-related capital programs and system improvement initiatives. As these programs tend to be infrequent and periodic in nature, the reserve fund balance in the Capital Reserve may significantly increase or significantly decrease in any given year depending on the programs undertaken. The Board's ultimate objective, as discussed in the Financial Plan, is to fund capital projects in the long-term without the extensive use of debt. Accordingly, this objective subsequently requires a greater use of Reserve funds than might be experience by municipalities, and significant increases in balances to finance periodic future expenditures. Notwithstanding, the issue of generational equity remains to be fully addressed in future Financial Plans.

In accordance with the Financial Plan and Board resolution, the target balance of the Emergency Reserve Fund is established at \$1.0 million, wherein contributions will be discontinued when the Emergency Reserve Fund balance reaches the target value. The Emergency Reserve Fund is intended to fund unplanned emergency-related projects such as pipeline failures, tank ruptures and treatment process failures.

Acknowledgement

Preparation of these budget documents was undertaken by the Regional Water Supply Division staff with the assistance of Debbie Gibson and City of London Financial Services.

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Appendix A:
2018 Capital Project Summary

Attachments:
2018 Operating and Capital Budgets and Nine Year Capital Forecast, October 5, 2017

APPENDIX A: 2018 CAPITAL PROJECT SUMMARY

Lifecycle Projects (Maintain LOS)

EA4073 – Plant Instrumentation (ongoing program): Much of the plant's online analyzers are beyond their useful life. This program funds a systematic replacement of the water system's online analyzers that are critically necessary to ensure ongoing compliance with regulations and the system's Municipal Drinking Water Licence.

EA4107 – Concrete Crack Injection (multi-year program): Much of the facility, including chemical and water storage tanks, is constructed of concrete which, over time, cracks and deteriorates. The initial condition survey undertaken by the contracted operating authority identified several locations throughout the facility where significant cracks had formed which would accelerate the deterioration of the facility. This program proposes sealing the significant and high-risk cracks throughout the facility on a systemic basis.

EA4108 – Meter Replacement Program (multi-year program): This project continues a multi-year replacement program for the system's aging water revenue meters. Because of the size and physical location of these meters, additional minor alterations to the chambers and installation may be required to accommodate the installation of modern meters.

EA4114-18 – Annual Maintenance (ongoing program): This capital project is provided on an annual basis pursuant to the Operations, Maintenance and Management Agreement with the contracted Operating Authority, the Ontario Clean Water Agency (OCWA), as a source of financing for Capital Maintenance projects undertaken by the contracted operating authority with the Board's approval. Capital Maintenance is generally defined [*paraphrased*] as the maintenance or repair of equipment or assets which because of the amount of the expenditure is typically "capital" in nature rather than operational. The benchmark used to determine Capital Maintenance projects is that if the cost of the material and any contracted labour (exclusive of OCWA labour) is over \$30,000 (plus indexed inflation), then the project is considered Capital Maintenance and OCWA is responsible for expending the first \$30,000 (plus indexed inflation) and the Board would fund the remaining cost.

EA4118 – Sluice Gate Repairs: All sluice gates throughout the water treatment plant are original to plant construction (fifty years old) and are leaking. A significant leak has developed at the low lift sluice gate which isolates the plant from the lake. This is a significant safety risk to maintenance staff during annual maintenance in the low lift well and must be addressed.

EA4132 – Alum Storage Tanks: The existing FRP bulk storage tanks used to store aluminum sulfate (alum), located in the basement of the Chemical Building at the water treatment plant, are past their service life, showing signs of age-related deterioration, and are undersized for the plant's current needs. The 2018 project proposes to undertake the preliminary design for the replacement of the tanks, make recommendations related to sizing and constructability, and provide cost estimates for the replacement of the existing tanks.



Agenda Item #	Page #

File No. E27 (2017)

Service Water Piping Replacement: The existing service water piping within the facility are original to plant construction and starting to show signs of age-related deterioration. This multi-year program proposes to replace portions of service water pipes within the facility which are found to be in poor condition

Low Lift Service Water Connection: A portion of the service water main along the low lift road was previously replaced when the road was reconstructed due to numerous leaks and poor/undersized pipe conditions. To ensure continuous water supply to the low lift building and zebra mussel system, this water main will be connected to the plant treated water discharge header which currently supplies the new Residuals Management Facility. The low lift building will be connected to the new water main and the old undersized main will be abandoned.

High Lift Pump Replacement: The recently completed Energy Audit and Pump Optimization study identified a significant opportunity for energy savings and pump optimization with the replacement of the high lift pump system. This system is largely original to the plant construction (fifty years old) but was modified in 1996 when London and the Aylmer Secondary Water System joined the regional water supply. The 2018 project will provide the preliminary and detailed engineering of the pump replacement, confirm construction requirements, anticipated savings, and available funding from IESO, Hydro One and other senior government programs.

Control Panel/Wire Cleanup: Previous changes, upgrades and replacements at the water treatment plant over its fifty year history has resulted in a significant number of panels that have been virtually abandoned in place, in whole or in part. In order to ensure operational responsiveness, it is necessary to investigate each panel, determine if any of the control wires are still active, and remove any abandoned panels and wiring currently in place.

EMPS Cell 2 Access House Rehab: Initial condition survey completed at the beginning of OCWA's contract noted significant deterioration of the "access house" (entrance) to cell #2 of the terminal reservoir, largely due to moisture and lack of historic exterior maintenance. Various electrical and instrumentation components are at high risk of compromise.

Fluoride System Assessment: Initial condition survey completed at the beginning of OCWA's contract noted that some of the piping carrying diluted hydrofluorosilicic acid (fluoride) is deteriorating and is at risk of failure, requiring replacement. In addition, during plant shut-down/start-up processes, the dosing of fluoride must be manually controlled and isolated in order to avoid intermittent fluctuations of fluoride concentrations in the treated drinking water. In order to improve the operation and control of the fluoridation system, an engineering review is required to verify the condition of the entire fluoridation system, identify opportunities for improved dosing control and dosing application points, and provide a scope of work for the replacement of fluoride piping. This may include the implementation of a new dosing point in the treatment system and alternate control strategies.

Garage Door Replacement: The exterior garage door to the vehicle bay and high lift pump area is original to the plant construction and has significantly deteriorated, requiring replacement. There are numerous gaps in the door frame and structure, and a recent condition assessment has confirmed that the door structure has little remaining insulation.



Agenda Item #	Page #

File No. E27 (2017)

Low Lift Pump #1 Rebuild: Low Lift Pump #1 is no longer operating efficiently and has deteriorated to the point where it requires a major rebuild. This project is an instance of maintenance/repair undertaken by the contracted operating authority, however the value of the materials and contracted labour exceeds the threshold within their service agreement. Accordingly, this project qualifies under the Annual Maintenance fund (EA4114) but would exceed the value normally funded on an annual basis. Staff recommends that this Annual Maintenance Fund continue, and this maintenance/repair project related to the low lift pump be funded in addition to the normal Annual Maintenance program.

Low Lift Building HVAC: The existing cooling system at the low lift building utilizes the high volume blowers and water sprayers to cool the low lift building. This is a significant source of water usage within the water treatment plant during the summer. There is currently no dehumidification or conditioning of the air, other than the air handling blowers and heating system, which is contributing to the deterioration of the materials and equipment within the building. The 2018 project proposes to undertake the preliminary and detailed design of a replacement system, identify constructability issues, potential savings, and cost estimates.

Non-Revenue Meter Replacement: Flow meters throughout the facility are necessary to control and monitor the various treatment processes. In addition to process controls, the raw water flow meter is also required for regulator reporting related to the water system's Permit To Take Water. This project proposes a systemic replacement of the old and failing non-revenue meters throughout the water treatment facility to ensure continued process control and regulatory compliance.

Service Improvement Projects (Enhanced LOS, Growth, Regulator Changes, Efficiency)

EA4039 – Record Drawings and Documents (ongoing program): As a requirement of the water system's Municipal Drinking Water Licence and the Drinking Water Systems Regulation (O.Reg. 170) of the Safe Drinking Water Act, this project is a multi-year program to ensure that the system's record drawings and system documentation are accurate and kept up to date.

EA4095 - WTP Interior Renovations: This is a multi-year program intended to address the aging buildings, and changing needs of staff and resources. A significant issue to be addressed in 2018 and 2019 is associated with the changing makeup of plant staff from the time of original construction in the late 1960's. Coordinated with the pending security-related investments, the 2018 program proposes to undertake the engineering and architectural designs and construction staging plans required to address:

- Male/female washroom and locker room requirements;
- Meeting and lunchroom space;
- Location of a secure control room; and,
- Room utilization requirements associated with security staffing, monitoring, and site access.

EA4153 - Backwash Pump Replacement: The existing pump arrangement has been determined to be insufficient to satisfy the full flow and volume range necessary to clean the new filtration system. This system is largely original to the plant construction (fifty years old), and utilizes two pumps to undertake a filter backwash. There are no backup or standby pumps if one of these pumps fails or is taken out of service for maintenance. The 2018 project will provide detailed engineering of the proposed pump replacements utilizing a duty/standby arrangement instead of a lead/lag arrangement, confirm construction requirements, anticipated savings, and available funding from IESO, Hydro One and other senior government programs. Once the detailed engineering is completed and construction requirements fully understood, this project may be merged with the proposed High Lift Pump Replacement project to achieve better pricing, if the timelines and schedules align.

Security Upgrades: The recently completed Security Audit and Threat Risk Vulnerability Assessment provided policy, resource, and site-specific recommendations to mitigate security and safety risks at all facilities. The project proposed is a multi-year allowance to undertake security-related modifications to all facilities, based on the criticality assessment and recommendations of the security specialist.

Dissolved Oxygen Analyzer Installation: The monitoring of raw water quality is an important first-step in ensuring the adequacy of the treatment process and providing early warning of changing raw water conditions. Emerging issues such as cyanobacteria, greater challenges associated with lake turnover and thermocline, and the potential for low oxygen “dead zones” remain a challenge for the system to detect and respond to. The proposed dissolved oxygen analyzer on the raw water supply will improve the response to changing conditions and mitigate the risk of poor treated water quality supplied to area municipalities.

Pre-Treatment Hydraulics Evaluation: The performance of the water treatment plant can be inconsistent during periods of poor raw water conditions (moderate to high turbidity). An evaluation of the plant hydraulics and flow conditions is necessary to review and better understand plant performance under variable conditions. This information is necessary for the optimization of various treatment systems, improve plant performance, and identify areas of inefficient mixing and flow conditions.



Elgin Area

Primary Water Supply System

2018 Operating and Capital Budgets

and Nine Year Capital Forecast

October 5, 2017

Elgin Area Primary Water Supply System 2018 Budget

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● 2018 Capital Plan with Forecast for 2019 to 2027	3-4
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● Reserve Fund Analysis and Continuity Schedules	6-8
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**Elgin Area Primary Water Supply System
2018 Operating Budget
Revenue and Expenditure Summary
(\$000's)**

	2017 Approved Budget	2018 Proposed Budget	Incr (Decr) Over 2017	% Budget Incr (Decr)	2017 Year End Projection
Revenues:					
Volume Revenues ⁽¹⁾	11,419	11,916	497	4.4%	11,343
Other Revenues	10	10	0	0.0%	14
Total Revenues	\$ 11,429	\$ 11,926	\$ 497	4.3%	\$ 11,357
Expenditures:					
Total Service Contract Costs ⁽²⁾	4,976	5,336	360	7.2%	5,012
Administration and Other Expenditures	1,358	1,482	124	9.1%	1,171
Debt Principal Repayments ⁽³⁾	2,516	3,024	508	20.2%	2,515
Interest on Long Term Debt ⁽³⁾	562	423	(139)	(24.7)%	562
Contribution to Reserve Funds	2,017	1,661	(356)	(17.6)%	2,097
Total Expenditures	\$ 11,429	\$ 11,926	\$ 497	4.3%	\$ 11,357

*subject to rounding

Notes:

(1) A volume increase is anticipated in 2018 (from 14,756,500 m³ in 2017 to 14,806,500 in 2018). Rates per m³ are proposed to increase by 4.0%.

(2) Part of the service contract costs are direct to the Elgin Area system (i.e. electricity), while all other costs are fixed to the annual operating costs in the bid price from the Ontario Clean Water Agency.

(3) Refer to page 9 for more information on debt.

**Elgin Area Primary Water Supply System
2018 Operating Budget
Administration & Other Expenditures
(\$000's)**

Administration & Other Expenditures	2017 Approved Budget	2018 Proposed Budget	Incr (Decr) Over 2017	% Budget Incr (Decr)	2017 Year End Projection
Management & Administrative Personnel ⁽¹⁾	519	699	180	34.7%	445
Support and Overhead Costs ⁽²⁾	203	208	5	2.5%	203
Payment in Lieu of Taxes	158	155	(3)	(1.9)%	155
Insurance (Director & Officers, General Liability)	120	130	10	8.3%	126
Financial/Office Expenses ⁽³⁾	185	203	18	9.7%	188
Information Technology Maintenance ⁽⁴⁾	100	27	(73)	(73.0)%	25
Purchased Services (Legal, Consulting, Locates, etc.) ⁽⁵⁾	73	60	(13)	(17.8)%	29
Total Administration & Other Expenditures	\$ 1,358	\$ 1,482	\$ 124	9.1%	\$ 1,171

Notes:

(1) Management & Administrative Personnel costs have increased due to the restructuring report approved by the Board on March 9/17 along with anticipated wage adjustments (in accordance with collective agreements).

(2) Support and Overhead Costs reflect the costs charged by the Administering Municipality for various administrative functions (e.g. Finance, Purchasing, Human Resources, Risk Management, etc.).

(3) Financial/Office Expenses include other administrative expenses such as leased space, training/seminars/conventions, computer leasing, and sampling and research initiatives.

(4) For the 2018 budget year, the budget for Annual IT Maintenance has been decreased based on the last 3 years' actual expenditures.

(5) The 2018 decrease in Purchased Services is attributable to refinement of costs for the new utility locate arrangements with ON1Call and G-Tel started in 2016.

**Elgin Area Primary Water Supply System
2018 Budget
2018 Capital Plan with Forecast for 2019 to 2027
(\$000's)**

		Project Total	Prior Years Budget	2017 Approved Budget	2018 Proposed Budget	Forecast				
						2019	2020	2021	2022	2023 to 2027
#	Description									
EA2019	Master Water Plan Update	200					100			100
EA4039	Record Drawings	80	5	50	5		5		5	10
EA4020	Financial Plan	100					50			50
EA4055	Pipeline Condition Assessment	800					800			
EA4068	Pipeline & Chamber Upgrades	1,250							1,250	
EA4073	Plant Instrumentation	355	25	30	30	30	30	30	30	150
EA4077	Asset Management Plan	300					150			150
EA4095	WTP Interior Renovations	360	100		100	160				
EA4107	Concrete Crack Injection	90	30		30		30			
EA4108	Revenue Meter Replacement Program	180	25	55	100					
EA4109	Plant Clearwell-Reservoir	200		200						
EA4114xx	Annual Maintenance ⁽¹⁾	1,200	100	100	100	100	100	100	100	500
EA4118	Sluice Gate Repairs	100	50		50					
EA4127	Divison Vehicle	15		15						
EA4128	High Lift Switchgear	1,200		1,200						
EA4129	Server Room Fire Suppression	30		30						
EA4131	Cell 1 Isolation Valve Replacement	100		100						
EA4132	Alum Storage Tanks	625		50	75	500				
EA4133	Coagulation Optimization Study	25		25						
EA4134	Security Assessment and Audit	25		25						
EA4140	Drain Pipe Replacement	40	20	20						
EA4153	Back Wash Pump Replacement	1,038			200	838				
EA4154	Polymer System Upgrades	250		250						
EA4151	Divisional Office Expansion	130		130						
Proposed	Hydraulic/Transient Model Update & Transient Monitoring	82					82			
Proposed	Service Water Piping Replacement	150			25	25	25	25	25	25
Proposed	Low Lift Service Water Connection	270			50	220				
Proposed	Security Upgrades	550			150	100	100	100	100	
Proposed	High Lift Pump Replacement	4,265			480	3,785				
Proposed	Asphalt Resurfacing	100					100			

cont'd

**Elgin Area Primary Water Supply System
2018 Budget
2018 Capital Plan with Forecast for 2019 to 2027
(\$000's)**

		Project Total	Prior Years Budget	2017 Approved Budget	2018 Proposed Budget	Forecast				
						2019	2020	2021	2022	2023 to 2027
#	Description									
Proposed	Control Panel Wire Cleanup	25			25					
Proposed	Dissolved Oxygen Analyzer Installation	20			20					
Proposed	EMPS Cell 2 Access House Rehab	50			50					
Proposed	Fluoride Lines	25				25				
Proposed	Fluoride System Assessment	25			25					
Proposed	Garage Door Replacement	75			75					
Proposed	Generator Multilin Relay	50				50				
Proposed	Low Lift Pump #1 Rebuild	150			150					
Proposed	Low Lift Building HVAC	250			250					
Proposed	Non-Revenue Meter Replacement Program	250			75	75	100			
Proposed	Evaluate Pre-Treatment Hydraulics	50			50					
Planned	Crop Yield Monitoring - 2013 Pipeline Twinning	170				170				
Planned	Add 2 ML Additional Reservoir Storage	3,000							3,000	
Planned	Carbon Transfer Pump 1/2 Replacement	66						66		
Planned	HL Pump Well - Fluoride/Chlorine Diffuser Replacement	50				50				
Planned	HL, Clearwell, Reservoir - Sluice Gate Replacement	100						100		
Planned	Pre-treatment PH Adjustment	200					200			
Planned	SCADA/PLC - Software Review/Upgrade	500						500		
Planned	Source Water Protection Assessment	100				50				50
Planned	UV System Inspection	20				20				
Planned	WTP Flow Meter Inspection/Replacement	50						50		
		\$ 19,136	\$ 355	\$ 2,280	\$ 2,115	\$ 6,198	\$ 1,772	\$ 971	\$ 4,510	\$ 935

Notes:

(1) Capital account for Board contributions to maintenance projects undertaken by the operating authority.

Elgin Area Primary Water Supply System
2018 Operating Budget
Source of Financing
(\$000's)

Funding Source	2017 Approved Budget	2018 Proposed Budget	2019	2020	2021	2022
Asset Replacement Reserve Fund	1,900	1,266	3,257	1,468	871	1,406
Capital Reserve Fund	380	849	2,941	304	100	3,104
Emergency Reserve Fund	-		-	-	-	
Debenture	-		-	-	-	
Total Capital Funding	\$ 2,280	\$ 2,115	\$ 6,198	\$ 1,772	\$ 971	\$ 4,510

**Elgin Area Primary Water Supply System
2018 Budget
Asset Replacement Reserve Fund Analysis and Continuity Schedule
(\$000's)**

Asset Replacement Reserve Fund ⁽¹⁾	Actual	Projected					
	2016	2017	2018	2019	2020	2021	2022
Reserve Fund Opening Balance	4,244	4,819	1,795	1,807	571	614	1,218
Sources:							
Current Year Operating	2,000	1,080	1,241	2,000	1,500	1,459	1,000
Transfer from Capital Reserve							
Net Interest Earnings - 1.8% ⁽²⁾	66	59	37	21	11	16	18
Total Sources	\$ 6,310	\$ 5,958	\$ 3,073	\$ 3,828	\$ 2,082	\$ 2,089	\$ 2,236
Uses:							
Total Lifecycle Capital Projects	420	1,900	1,266	3,257	\$ 1,468	\$ 871	\$ 1,406
Less: Other Funding Sources							
Less: Debenture Requirement							
Less: Additional Capital drawdowns							
Net Current Year Fund Draws ⁽³⁾	420	1,900	1,266	3,257	1,468	871	1,406
Prior Years Capital Expenditures ⁽³⁾	1,072	2,263					
Total Uses	\$ 1,492	\$ 4,163	\$ 1,266	\$ 3,257	\$ 1,468	\$ 871	\$ 1,406
Reserve Fund Ending Balance	\$ 4,819	\$ 1,795	\$ 1,807	\$ 571	\$ 614	\$ 1,218	\$ 829

Notes:

- (1) The Asset Replacement Reserve Fund was established to fund projects of a lifecycle nature to maintain existing levels of service and has an average annual target ending balance of \$4.0M.
- (2) Projected net interest earnings based on an average rate of anticipated sources and uses of funds.
- (3) Drawdowns are based on full/committed capital needs and not intended to project the actual cash flow of funds being utilized in a particular year.

**Elgin Area Primary Water Supply System
2018 Budget
Capital Reserve Fund Analysis and Continuity Schedule
(\$000's)**

Capital Reserve Fund ⁽¹⁾	Actual	Projected					
	2016	2017	2018	2019	2020	2021	2022
Reserve Fund Opening Balance	3,027	3,218	3,076	2,712	470	1,572	3,169
Sources:							
Current Year Operating	569	1,017	420	671	1,388	1,655	2,247
Net Interest Earnings -1.8% ⁽²⁾	54	56	65	28	18	42	49
Total Sources	\$ 3,650	\$ 4,291	\$ 3,561	\$ 3,411	\$ 1,876	\$ 3,269	\$ 5,465
Uses:							
Total System Improvement & Growth Projects	17	380	849	2,941	\$ 304	\$ 100	\$ 3,104
Less: Other Funding Sources							
Less: Debenture Requirement							
Less: Additional Capital Drawdowns							
Net Current Year Fund Draws ⁽³⁾	17	380	849	2,941	304	100	3,104
Transfer to Asset Replacement Reserve	335						
Prior Years Capital Expenditures ⁽³⁾	80	835					
Total Uses	\$ 432	\$ 1,215	\$ 849	\$ 2,941	\$ 304	\$ 100	\$ 3,104
Reserve Fund Ending Balance	\$ 3,218	\$ 3,076	\$ 2,712	\$ 470	\$ 1,572	\$ 3,169	\$ 2,361

Notes:

(1) The Capital Reserve Fund was established to fund projects of a growth nature, enhancing levels of service, or address issues which are regulatory or safety in nature.

(2) Projected net interest earnings based on an average rate of anticipated sources and uses of funds.

(3) Drawdowns are based on full/committed capital needs and not intended to project the actual cash flow of funds being utilized in a particular year.

**Elgin Area Primary Water Supply System
2018 Budget
Emergency Reserve Fund Analysis and Continuity Schedule
(\$000's)**

Emergency Maintenance Reserve Fund ⁽¹⁾	Actual	Projected					
	2016	2017	2018	2019	2020	2021	2022
Reserve Fund Opening Balance	373	980	998	1,016	1,034	1,053	1,072
Sources:							
Current Year Operating	600		-	-	-	-	-
Net Interest Earnings -1.8% ⁽²⁾	7	18	18	18	19	19	19
Total Sources	\$ 980	\$ 998	\$ 1,016	\$ 1,034	\$ 1,053	\$ 1,072	\$ 1,091
Uses:							
Current Year Capital Expenditures							
Prior Years Capital Expenditures							
Total Uses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Reserve Fund Ending Balance	\$ 980	\$ 998	\$ 1,016	\$ 1,034	\$ 1,053	\$ 1,072	\$ 1,091

Notes:

(1) The Emergency Reserve Fund was established to fund projects that arise on an emergency basis. This funding is to be in place outside of the Capital and Asset Replacement Reserve Funds and their defining guidelines. Contributions will be capped once the reserve fund balance reaches \$1.0 million.

(2) Projected net interest earnings based on an average rate of anticipated sources and uses of funds.

Elgin Area Primary Water Supply System
Flow and Financial Analysis Summary
(\$000's)

Factors	Actual	Approved	Projected					
	2016	2017 Budget	2017	2018	2019	2020	2021	2022
Rate Increase ⁽¹⁾	9%	5%	5%	4%	4%	3%	3%	3%
Total Flow m ³	14,946,090	14,756,500	14,658,971	14,806,500	14,806,500	14,806,500	14,806,500	14,806,500
Total Water Rate \$/m ³	0.7369	0.7738	0.7738	0.8047	0.8369	0.8620	0.8879	0.9145
Flow Volume Revenues	11,015	11,419	11,343	11,916	12,392	12,764	13,147	13,541
Other Revenue	378	10	14	10	10	10	10	10
Total Revenue	\$ 11,393	\$ 11,429	\$ 11,357	\$ 11,926	\$ 12,402	\$ 12,774	\$ 13,157	\$ 13,551
Operating Expenses ⁽²⁾	4,760	4,976	5,011	5,336	5,705	5,859	6,020	6,288
Administrative Expenses	1,198	1,358	1,171	1,482	1,512	1,512	1,512	1,512
Debt Servicing Costs - Existing ⁽³⁾	2,266	937	937	935	-	-	-	-
Debt Servicing Costs - New ⁽⁴⁾	-	2,141	2,141	2,512	2,514	2,515	2,511	2,504
Total Operating & Administrative Expenses	\$ 8,224	\$ 9,412	\$ 9,260	\$ 10,265	\$ 9,731	\$ 9,886	\$ 10,043	\$ 10,304
Asset Replacement Reserve Fund Contributions	2,000	1,000	1,080	1,241	2,000	1,500	1,459	1,000
Capital Reserve Fund Contributions	569	1,017	1,017	420	671	1,388	1,655	2,247
Emergency Reserve Fund Contributions	600	-	-	-	-	-	-	-
Total Expenses	\$ 11,393	\$ 11,429	\$ 11,357	\$ 11,926	\$ 12,402	\$ 12,774	\$ 13,157	\$ 13,551

Notes:

- (1) Rate increases recommended are consistent with the approved Financial Plan which provide for prudent financial planning to accommodate inflation, new capital requirements, and adequate reserve fund balances.
- (2) Operating expense projections reflect annual inflationary increases and anticipated adjustments in accordance with the service agreement with the contracted operating authority.
- (3) Long term debt issued upon ownership transfer to the Board in 1998 consists of debentures in the amount of \$11.1M expiring in 2018. The interest rates are variable and range between 5.25% and 5.875%. Principal payments are due annually on August 6 and interest payments are due February 6 and August 6.
- (4) Debenture requirements since ownership transfer:
- Debt authorized (2006) for the Backup Generator (EA4052) in the amount of \$3.5 million with issuance in 2012 and payments beginning in 2013 (all-in rate of 2.8% for a 10 year term).
 - Debt authorized (2010) for the Treated Water Transmission Main (EA4024) in the amount of \$7 million with issuance in 2012 and payments beginning in 2013 (all-in rate of 2.8% for a 10 year term).
 - Prior year debt authorized for the Residue Management Plant (EA4023) in the amount of \$19 million with partial issuance in 2016 (\$7M) and payments beginning Sept/16 (all-in rate of 2.3% for a 10 year term), further debt issuance in 2017 in the amount of \$4.5M and payments beginning in Sept/17 (all-in rate of 2.48% for a 10 year term). It is not expected that any further debt will be required for this project.
 - Rates noted above could change depending upon market conditions at the time of debt issuance.